The Cotton Gin and Oil Mill

PRESS

DECEMBER 27, 1958

59th year

THE MAGAZINE OF THE COTTON GINNING AND OILSEED PROCESSING INDUSTRIES

A PROGRESSIVE AND RESPONSIBLE PUBLICATION

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LUMMUS COTTON GIN CO.

COLUMBUS, GEORGIA, U.S.A.

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for a Good New Year!

. . . to our many friends in the cotton ginning industry.

Whenever you need help with your ginning problems, you will find Continental always at your service.

CONTINENTAL GIN COMPANY

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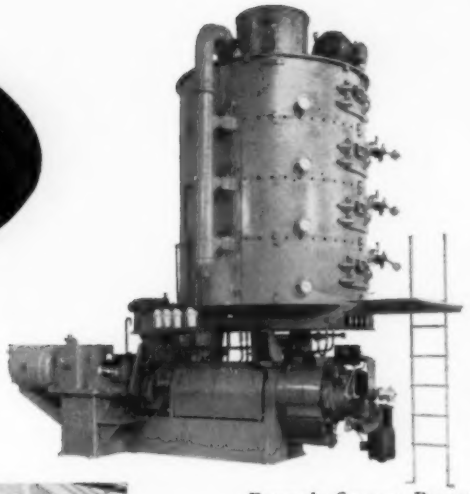
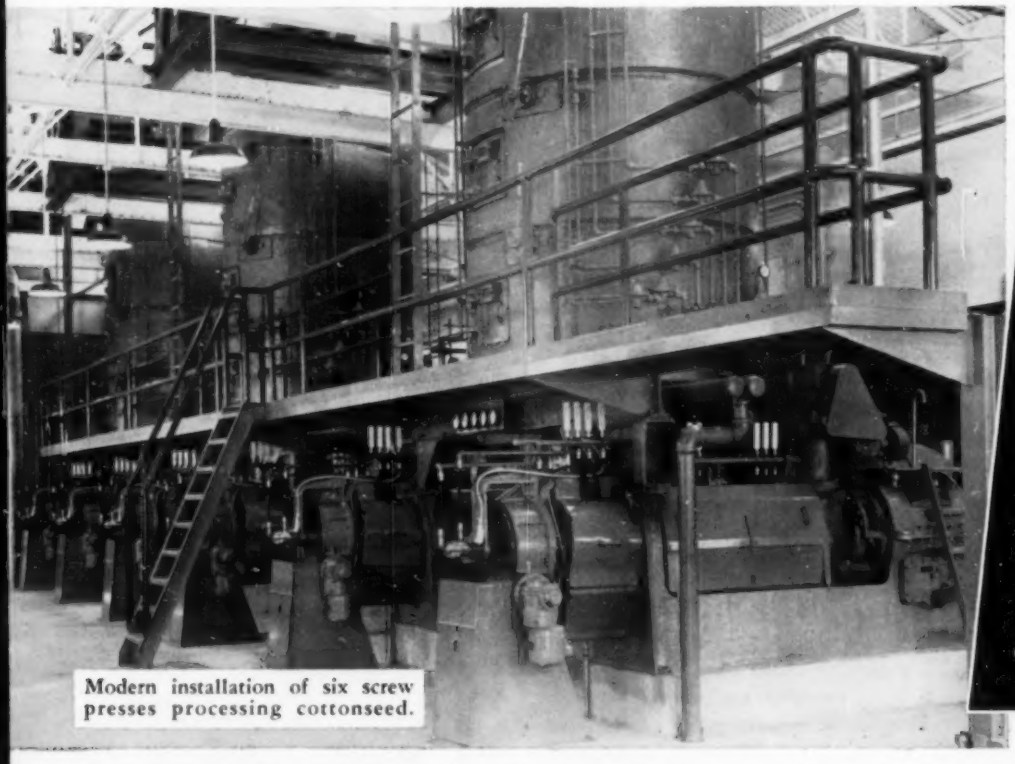
FRENCH / Modern Screw Presses

exactingly engineered to produce modern oil mill efficiencies on all types of oil seeds



French Screw Press with 4-high 85" cooker.



Modern installation of six screw presses processing cottonseed.

MANY NEW FEATURES ADD UP TO:

- Maximum oil recovery
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- Lowest installation cost
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- Highest quality products

French Mechanical Screw Presses have achieved the highest degree of efficiency in extracting oil seeds ever obtained consistently by mechanical processing. The many new features of French presses have made them the choice of oil millers in modernizing their press rooms. Careful research and exacting engineering have resulted in many improved features, making the French Mechanical Screw Press more efficient, easier to operate and maintain than ever before. This is the reason why oil mills all over the world have found that French Mechanical Screw Presses yield the highest return on investment.

The confidence of oil mills everywhere in French Screw Presses has been justified by the high degree of efficiency obtained. For example, every installation of new French screw presses started up this season in the United States operating on cottonseed has averaged *less than 3.0 per cent residual oil* in finished meal. Many installations have averaged around 2.50 per cent residual oil with highest quality premium products.

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VOL. 59 DEC. 27, 1958 NO. 26

THE COTTON GIN AND OIL MILL PRESS

THE COTTON GIN AND OIL MILL PRESS...

READ BY COTTON GINNERS, COTTONSEED CRUSHERS AND OTHER OILSEED PROCESSORS FROM CALIFORNIA TO THE CAROLINAS

* * *

OFFICIAL MAGAZINE OF:

NATIONAL COTTONSEED PRODUCTS ASSOCIATION
NATIONAL COTTON GINNERS' ASSOCIATION
ALABAMA COTTON GINNERS' ASSOCIATION
ARIZONA GINNERS' ASSOCIATION
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* * *

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OUR COVER PICTURE:

They've had it! As anyone can see, it's been a big Christmas for the cowboy on our cover and his faithful co-chaser of bandits, buffalo and what-have-you. Now, it's all over for Dec. 25, 1958. But it isn't quite all over for Mom, who has to put the cowboy and friend to bed and clean up the mess—or for Dad, who faces the January bills that he hopes to pay in February but probably won't clean up before March. But, it was worth all the trouble and cost to see Junior's face when he spotted that cowboy outfit. Money can't buy anything better than that.

Photo by A. Devaney

Rotor Lift

THE WORLD'S FINEST

VERTICAL

HELICOID SCREW ELEVATOR

8 basic types

The cotton ginning and oilseed processing industry's acceptance of Rotor Lift has been earned by performance.

Efficient operation and economical maintenance have been demonstrated year after year in the cotton ginning and oilseed processing industries. This is not our story—it's the user's story—and that's the best kind! Our side of the story is an illustrated catalog describing Rotor Lift's mechanical features and specifications, showing how it may be adapted easily and profitably to *your* needs.

Send for catalog with complete engineering data.

Rotor Lift
BEST AND FOREMOST SINCE 1925

SOUTHWESTERN SUPPLY AND MACHINE WORKS
6 S. E. 4th, P. O. Box 1217
OKLAHOMA CITY, OKLA.

T. J. HARRELL, left, received a plaque from Texas Cottonseed Crushers' Association in 1958. Jack Mills made the presentation for the Association.

Golden Deeds, and . . .

"GRANDPA DONKEYS" are a unique product of "Togie's" farm.

. . . Grandpa Donkeys

"TOGIE" HARRELL

A JEEP was presented to Harrell by livestock men in 1954. L. to R. are John B. Collier, Harrell and Raymond Buck.

CITIES SELDOM HONOR a farmer as much as Fort Worth has honored "Togie."

Of course, "Togie" has lived in Fort Worth 38 years, but he's still a farmer at heart and has always remained close to the Grandview, Texas, farm where he was born.

Most readers will know that "Togie" is T. J. Harrell, head of Traders Oil Mill Co. They may not know that a Negro mammy coined the nickname from his initials.

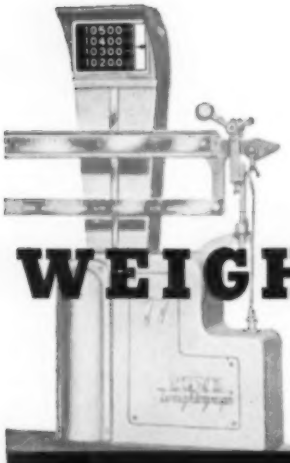
Baylor University at nearby Waco was the first step up for Tom Harrell in a career that was to make him Mayor of Fort Worth, president of Texas Cottonseed Crushers' Association and a leader in numerous civic, business and agricultural developments.

Growing and selling popcorn and watermelons and operating a meat delivery service were a couple of sidelines the energetic Grandview youth worked into his college activities. He also lettered in baseball and basketball, captained the 1915 basketball team; and was student manager of football. Vacations found him busy baling hay and threshing grain. He even went to classes, too, and got his A.B. in 1916.

"Togie" thought he would be worth $5,000 a year to any man when he entered business. Grandview Cotton Oil Co. moved the decimal leftward to $50 a month.

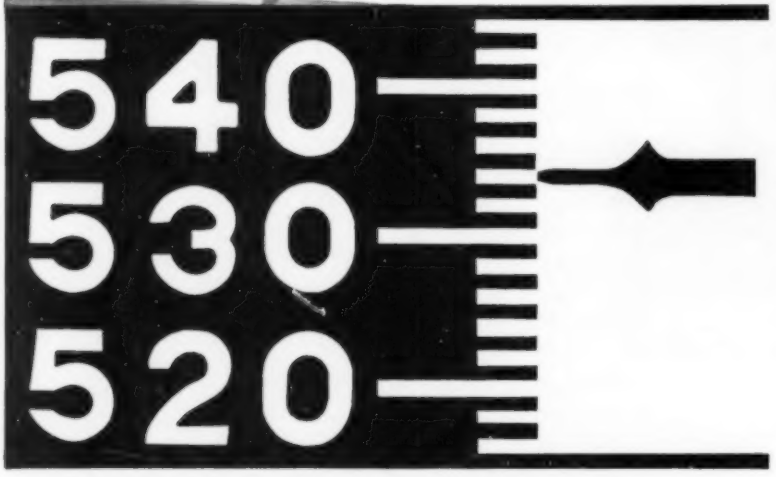
• **Off To See the World**—In 1917, Wold War I found him joining the Navy. After Newport, R.I., and Goat Island, San Francisco, Yeoman Harrell went to

(Continued on Page 50)



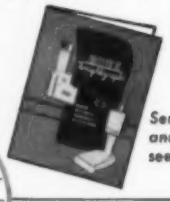
HOWE WEIGHTOGRAPH

READ WEIGHT IN NUMBERS THIS BIG

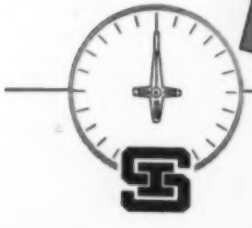


NO MORE "SCALE SQUINT!"

Pin up this ad and look at it from across the room—see how easy it is to read the weight! You can attach a Howe Weightograph to any beam scale, from small bench scales to the largest truck and railroad scales; different models available for different capacities. Standard models plug into ordinary electric outlet. So much easier, faster, more accurate, it quickly pays for itself. Use indoors or out . . . adjusts to eye level . . . parallax errors are completely eliminated.



Send for this detailed booklet and local representative's name—see the Weightograph demonstrated!



HOWE

THE HOWE SCALE COMPANY • RUTLAND, VERMONT

A SUBSIDIARY OF SAFETY INDUSTRIES, INC.

ELECTRICAL DIVISION • ENTOLETER DIVISION
LIGHTING DIVISION • AUTOMATIC TIMING & CONTROLS

laugh it off

A shy young man wanted to marry his gal but he simply couldn't muster up the courage to mention the words "marry" or "marriage" to her. Finally, one evening, he popped the question! He whispered, "Sally, how would you like to be buried with my people?"

• • •

A troop of Boy Scouts was being used as "guinea pigs" in a Civil Defense test in a Western city. The mock air raid was staged and the Scouts impersonated wounded persons who were to be picked up and cared for by members of the defense organization. One Scout was supposed to lie on the ground and await his rescuers, but the first aid people got behind schedule with their work and the Scout lay "wounded" for several hours.

When the first aid men finally arrived on the spot where the casualty was supposed to be, they found nothing but a penciled note:

"Have bled to death and gone home."

• • •

"Well, Jerry finally married that redhead."

"What got into him?"

"Buckshot."

• • •

Two opposing political candidates were arguing at a street-corner gathering.

"There are hundreds of ways of making money," one of the campaigners declared, "but only one honest one."

"And what's that?" asked the other candidate.

"Ah-ha!" answered the first. "I thought you wouldn't know."

• • •

Stella: Molly told me you told her that secret I told you not to tell.

Bella: But I told her not to tell you I told her.

Stella: Well, I told her I wouldn't tell you she told me you told her. So don't tell her I did.

• • •

The professor of chemistry was giving a lesson on the powers of different explosives.

"This," he explained, "is one of the most dangerous explosives of them all. If I am in the slightest degree wrong in my experiment, we are liable to be blown through the roof. Kindly come a little closer, so that you may follow me better."

• • •

"I dropped my watch from the top of the RCA building, got on the elevator, rode down, walked out on the street just in time to catch it."

"How'd you do that?"

"The watch was ten minutes slow."

• • •

"How long you in jail fo', Mose?"

"Two weeks."

"What am de chahge?"

"No chahge, everything am free."

"Ah mean, what has you did?"

"Done shot my wife."

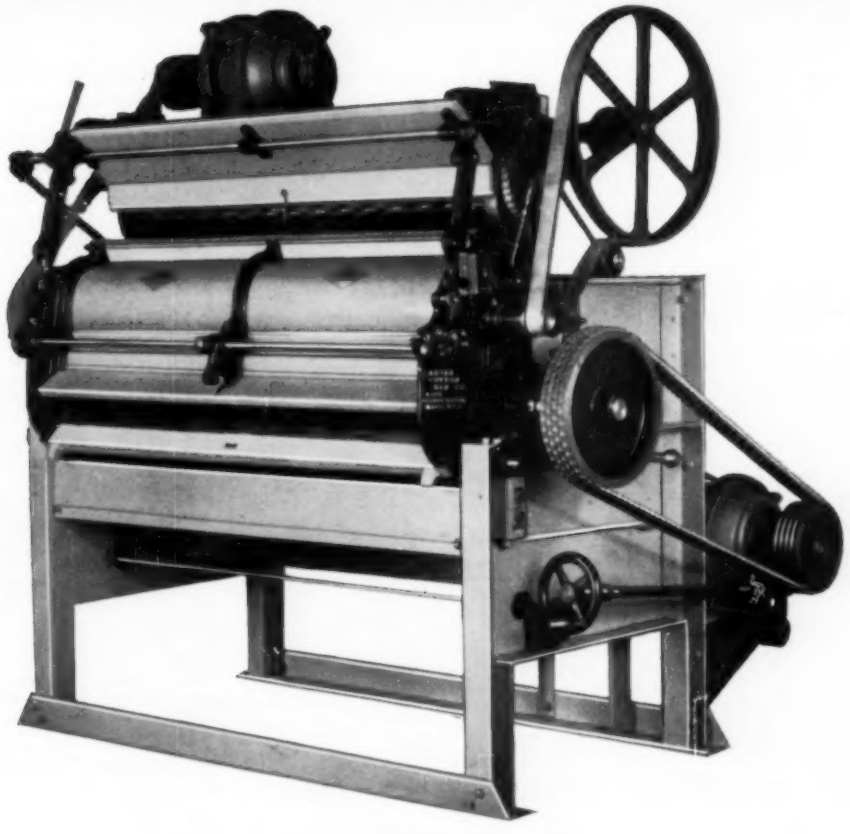
"You killed yo' wife and only in jail fo' two weeks?"

"Dat's all—den Ah gits hung."

• • •

"How do you like keeping bees?"

"Just fine. We don't get much honey, but they have already stung my mother-in-law three times."



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EAST BRIDGEWATER, MASS.

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EXPORT SALES: EAST BRIDGEWATER, MASSACHUSETTS

Dr. W. A. Jetter Dies

Dr. William A. Jetter, German-born chemist who had worked for several Memphis firms died Dec. 14 at his home, following a heart attack. He was 75.

Dr. Jetter had been employed as a chemist by Happy Feed Mills, Inc. and Barrow-Agee Laboratory, Inc.

He was born at Rottweil, Germany, where he attended the State College. He received his doctorate in chemical engineering at the Royal Karls College in Stuttgart, Germany.

Before coming to Memphis in 1932, he worked for several German firms.

He leaves his daughter, Miss Elizabeth M. Jetter, with whom he made his home.

• Mississippi Works For More Acres

MISSISSIPPI is conducting one of the Cotton Belt's most aggressive drives to get cotton acres planted in 1959.

Crushers, ginners, bankers and others have raised funds for extensive advertising and promotional activities to emphasize the need for planting the allotted acreage in cotton.

Billboards, radio and newspaper advertising and articles are stressing the advantages to the farmer of growing cotton and the economic importance of cotton and cottonseed to each community and to the state.

Gordon W. Marks, advertising executive who is the executive officer for Mississippi's ginners' and crushers' organization, is a leader in the campaign.

THE A B C'S OF GOOD BAGGING

A TOUGH — withstands hard use and rough wear

B RUGGED — extra strength for cleaner, stronger bales

C DURABLE — maximum protection from weather.

THESE ARE THE QUALITIES THAT MAKE "PRIDE OF INDIA" THE BEST BAGGING IMPORTED INTO THE U. S. A. TODAY!

"Pride of India"
MANUFACTURED IN INDIA

JUTE BAGGING

C. G. Trading Corporation
122 EAST 42nd ST. • NEW YORK, N. Y.

Stocks Maintained in Houston and Corpus Christi, Texas; Charleston, South Carolina

Outlook Brighter for Textile Industry

The U.S. textile industry ends 1958 in a mood of optimism that contrasts sharply with the gloomy forecasts expressed at the beginning of the year, Halbert M. Jones, president of the American Cotton Manufacturers' Institute, has declared.

Foremost, Jones said, was the apparent change in government attitude toward the industry and its problems. Other spots of encouragement include: Textile markets improved considerably over the last two months; textile securities were recommended by many market analysts; textile manufacturers were showing a determination to produce and merchandise more effectively, and the nation's economic health continued to improve.

Nation's Storage Capacity Keeps Pace With Crops

Increases in commercial and on-farm storage capacity kept pace with the record-breaking crop production in 1958, as more than 8,400,000,000 bushels of grains and oilseeds produced during the year were put under cover during the summer and fall without serious storage difficulties, USDA reports.

Safeguard Allotments

County cotton allotments must be safeguarded, The Progressive Farmer magazine comments in an editorial in the currert issue. As previously outlined in The Cotton Gin and Oil Mill Press, steps to protect allotments include organized efforts in the county to secure release of allotments by those who don't want to plant cotton and application for these acres by those who do. "Cotton acreage allotments are valuable," the farm magazine emphasized.

Shortening Price Cut

Shortening prices were reduced by major manufacturers by one-half of a cent per pound in December. Price levels are the lowest in two years.

Purina Sales Rise

Ralston Purina's sales in the fiscal year 1957-58 were $493,527,000, up 13 percent from the previous year. Earnings also were at a record high, Donald Danforth, board chairman, reported.

Retired Ginner Dies

Daniel Boone, who retired 15 years ago after operating gins at Crawford and Earle, Ark., died Dec. 16 in Memphis. He was 83. Survivors include his wife and a sister, Mrs. Annie McCaa of Memphis.

■ **RAYMOND KING, Lubbock Cotton Oil Mill, and MRS. KING will be guests of Lubbock Agricultural Club on a trip to the New Year's Cotton Bowl game in Dallas. He won the trip for getting the most new members for the Lubbock club.**

Continental scores again!

—with world's finest
120-SAW AUTOMATIC GIN

This letter is striking evidence of the outstanding efficiency and economical operation of Continental's new 120-Saw Automatic Gin. Its record of performance is all the more amazing since the Norfleet and Allen plant employs only farm labor — no specialists.

NORFLEET AND ALLEN
DUNDEE, MISSISSIPPI

November 13, 1958

Mr. R. T. Dorsey, Vice-President
Continental Gin Company
Birmingham, Alabama

Dear Mr. Dorsey:

I want to take this opportunity to tell you how well pleased I am with our new two 120-Saw Gin set-up. As you know, I have used Continental Gin machinery since 1940, and the present gin is the most satisfactory and efficient operation I have ever used or seen used.

Our most important improvements are more volume and the grades are exceptionally good. Due to weather conditions or some peculiar property of the crop, our cotton has not opened as it should, and picking has been nearly as rough as in 1957. Since the beginning of the ginning season our machine picked bales have run better than strict low middling in grade. Ninety per cent of the hand picked cotton is strict middling.

In addition to the good grades and preparation, the volume feature will appeal to any ginner. We are averaging 4½ to 5 bales of machine picked cotton per hour and 6 to 6½ bales of hand picked per hour.

I can't say enough for the efficiency of the 120-Saw Gin, and any ginner who uses this advanced machinery will enjoy a more economical operation.

Sincerely yours,

C. M. Allen

The Norfleet and Allen Outfit consists of these Continental machines:

One 6-Trough Drier, one 50-inch Impact Cleaner, two Perfection Extractors, two 120-Saw Gins, two FP-500 Diamond Unit Lint Cleaners, one DFB Lint Cleaner.

Features
of the 120-Saw Automatic Gin

- **High Capacity**
- **Operates with a soft gin roll**
- **Low Power Consumption**
- **Two Way Moting**
- **Automatic Feed**
- **Push Button Operation**

Complete details on Continental's new 120-Saw Automatic Gin are available on request. Call, wire or write your nearest Continental office.

CONTINENTAL GIN *Company*
BIRMINGHAM, ALABAMA

ATLANTA • DALLAS • HARLINGEN • LUBBOCK • MEMPHIS • PHOENIX • TULARE

from our Washington Bureau

by FRED BAILEY
WASHINGTON REPRESENTATIVE

The Cotton Gin and Oil Mill Press

• **Do-Something Congress**—It is by no means certain that the Congress which convenes here week after next will be a "do-nothing" Congress. There's good reason to think just the opposite.

Newly-elected lawmakers — especially the many Democratic liberals—feel they have a mandate to do something "constructive" about farm programs . . . and to do it in 1959.

Secretary Benson is demanding a showdown . . . now. His aides confide he thinks the time is right; farm income in 1958 was at a relatively high level, so farmer opposition to his program should be less than it's likely to be a year from now; surpluses and disposal costs are headed up, so city-voters ought to be in a mood for agricultural program "reform."

This situation contains—as one lawmaker back in town early puts it—" . . . all the makin's for a showdown, one in which somethin' or someone's gotta give."

Wheat will come first, then tobacco and peanuts. Cotton will come later. As we've reported all along, the cotton program now on the books will stay there at least through 1960.

But don't get the impression that what happens in this Congress doesn't affect cotton. It does. The fight shaping up in Washington deals with much more than the details of farm programs; it deals with the whole gamut of government's dealings with agriculture. It deals with the extent of government's responsibility in helping agriculture make necessary economic adjustments, and in providing farmers with reasonable incomes. It's a question of both ethic and financial responsibility.

Thus, cotton has no exclusion from what's done in this and the following session of Congress . . . only a postponement.

Benson's wants and wishes are widely known. They're the same as laid down in January 1953, when he took office. He hasn't changed, and won't.

Democrats and a smattering of liberals across the political aisle still are bobbing for a farm program they can back, one they can get together on . . . and are having a difficult time of it. They're more agreed on what they don't want, namely Benson's program or any part of it. They're widely agreed, too, that neither is a return to high, rigid price supports a program they could latch onto with any political advantage or hope of success. The old 90 percent of parity, fixed support scheme is a dead duck.

Instead, a growing number of liberals have their eye on reviving the Brannan Plan. Brannan Plan backers hope to soft-peddle the program by dressing it up, toning it down, and changing the label. Chiefly, that's how the wool program was put across. As one cynic wryly quips: "The Wool Act is little other than the Brannan Plan in sheep's clothing."

Here, in summary, is how the "compensatory payment" plans due to be tooted in the coming session of Congress are likely to differ from the ill-fated proposals of Truman's one-time farm chief.

Eligibility for payments will be tied to production control. That is, to qualify for compensatory payments under any new legislation that's proposed, a farmer will be required to retire a specified percentage of his acreage—put it in conservation practices.

Compensatory payment probably would be limited to that proportion of a farmer's production consumed domestically . . . with the exact amount set for each farm in terms of bales or bushels, not the elastic measuring-stick of acreage. Any excess would move into export at the going price, or be purchased by CCC at some relatively low rate.

Payment levels wouldn't likely be set as high as 100 percent of parity, probably closer to 90 percent.

This will be favored by a good many Democrats, those of a liberal stripe. Some farm-district Republicans will go along, as a preferable alternative to the proposals of Benson. National Farmers Union, and the small but growing National Farmers' Organization will likely give their backing. Benson and the American Farm Bureau Federation will virgorously oppose any effort to ramrod compensatory payments through Congress. So would most Republicans, and a sizable number of more-conservative Democrats. City-voter opposition would be strong. National Grange takes the position it would support a compensatory payment plan . . . "only as a last resort."

Opposition forces pooh-pooh chances of a compensatory payment law being enacted. One official high in USDA concedes there'll probably be lots of talk but "it will be all for the record," he adds. "Anyhow, if passed it would be vetoed."

Proponents of the plan discount the threat of a Presidential veto; they point smugly to returns from the last election showing that—if Democrats vote solidly —only two Republican votes in the Senate and eight in the House would be needed to override a veto . . . far less than the number of GOP Congressmen which voted against Benson when controversial legislation came up in the last Congress.

We don't pretend to know whether compensatory payment legislation will be enacted in 1959. Our guess is probably not, though we'll be able to tell better once the mood of the new Congress is determined. In any event, it's certain that you are going to hear more —much more—about the Brannan Plan. And it's certain, too, that cotton will sooner or later come into the conversation.

Memphis Clearing Group Names Phelan Chairman

James W. Phelan of Mitchell, Hutchins and Co., has been elected chairman of the board of directors for the Memphis Board of Trade Clearing Association. He succeeds Ila S. Jehl of the Marianna Sales Co., who becomes a director.

Named president was D. J. Guillory of Guillory Sales Co., who also heads the Memphis Board of Trade. Arthur A. Williams was re-elected executive vice-president.

Directors besides Jehl are Fred C. Lovitt of Fred C. Lovitt and Co.; Lee Canterbury of Cargill, Inc.; John J. Pepin of L. B. Lovitt and Co.; Harry B. McCoy of Humphreys-Godwin Co.; and Richard W. Miller of Pillsbury Mills, Inc.

The Clearing Association operates the Memphis Board of Trade's futures market.

Many Ginners Attended Pink Bollworm Hearing

Tom Murchison, first vice-president; Lon Mann, second vice-president; R. S. Barnett, executive committeeman, and W. Kemper Bruton, executive vice-president of Arkansas-Missouri Cotton Ginners' Association, along with many ginners, were present at the recent public hearing of the Arkansas State Plant Board in Little Rock.

Immediate pink bollworm action taken by the Plant Board included: 1. Set Feb. 1 as statewide plow-up date for all cotton stalks, 2. Set Feb. 5, as closing date for all gins and Feb. 15 as final date for gin clean-up, and 3. Require seed sterilization in all "certified and registered cottonseed" gins.

Mill Manager Dies

FRED L. WILSON, 55, manager of Planters Cotton Oil Mill and president of the Ennis (Texas) Chamber of Commerce, died Dec. 19 after a heart attack and emergency operation. He had been with Planters since 1921 and manager since 1955. In addition to his wife, Madeline, he is survived by one son, Jim Bob Wilson; a daughter, Miss Frieda Wilson of Ennis; three brothers, R. O. Wilson, Jr., of Waxahachie, Kenneth Wilson of Avalon and Burhl Wilson of Weatherford; and two sisters.

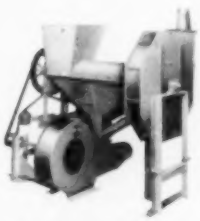
Mail the POST CARD for complete information about equipment that interests you - NO OBLIGATION - of Course!

KELLY DUPLEX

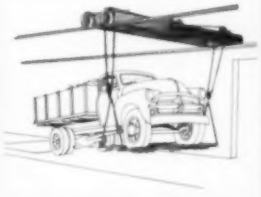
Offers you

Dependable Mill Equipment

Insist on Kelly Duplex and be sure of highest profits and better savings. It's modern, trouble-free, power-saving. Costs no more than ordinary mill machinery.



No. 100 GB Corn Sheller with Blowers for Grain and Cobs.

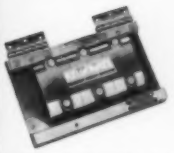


Electric Truck Hoist Cuts Handling Costs.

Pit Auger or Ear Corn Conveyor

Chain Drag in Double or Single Geared Types.

Vertical Feed Mixers ½ to 5 ton and larger



Magnetic Separator protects mill machinery.

Finger Type Corn Crusher and Feed Regulator

Corn Cutters and Graders with Aspirators.

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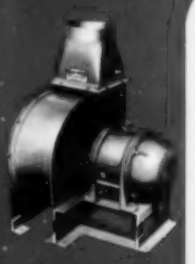
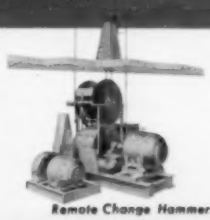
Combined Sheller-Cleaner

Forced Air Carloader with electric motor or belt drive.

Corn Scalpers with or without Air Cleaners.



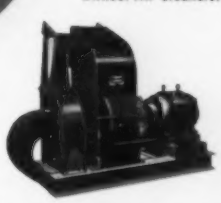
Grain Blower and Exhaust Fan



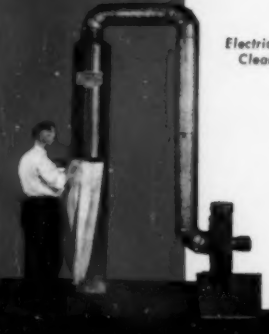
Remote Change Hammermill

Twin Molasses Mixer

Vertical Screw Elevator



Instant Change Hammermills 12", 16", 20", 24" sizes



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The Duplex Mill & Manufacturing Co., Springfield, Ohio

The Duplex Mill & Manufacturing Company Springfield, Ohio

Yes, I'm interested in the KELLY DUPLEX machinery checked at the right. Please send me full information on these machines without any obligation.

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- Regular Corn Sheller
- Pitless Corn Sheller
- Combined Sheller-Cleaner
- Gyrating Cleaner
- Corn Scalper
- Cob Crusher
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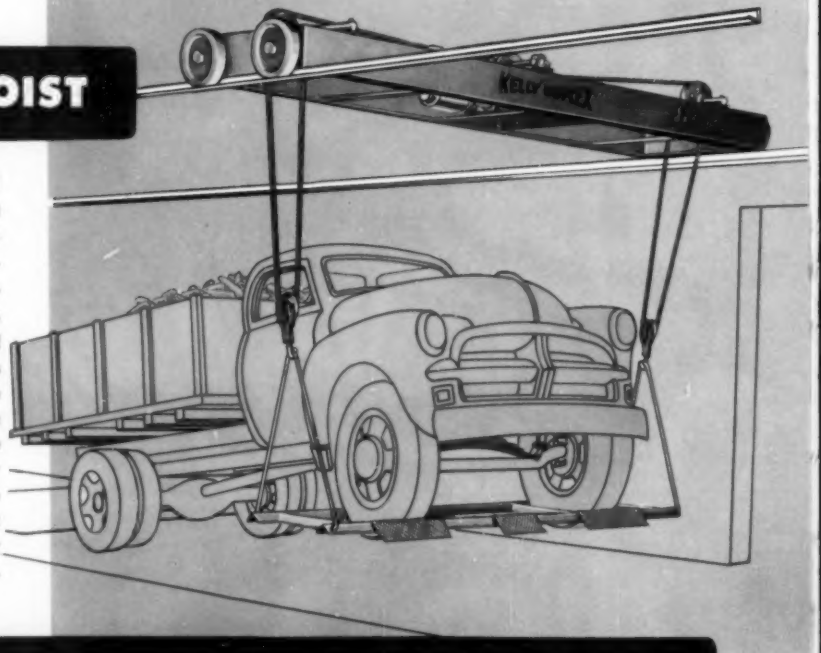
Designed to unload trucks in less time and with less power . . . and ruggedly constructed to assure trouble-free performance and long life . . . the Kelly Duplex Electric Truck Hoist brings top speed, efficiency and economy to your grain handling operation.

All welded steel construction, tough steel cable, heavy duty motor and special gearing combine to lift loads with absolute ease and safety. Positive action switch controls all raising and lowering—lifts truck to any height up to 15 feet, stops operation instantly at any point, holds truck at desired angle for any length of time. The entire hoist moves freely on an overhead steel track (so flanged that wheels cannot "jump the track" regardless of stress) . . . can easily be positioned for unloading into any number of dump sinks. Available in any width and powered to meet your requirements, the Kelly Duplex Electric Truck Hoist is made to fit perfectly into your plant setup. Mail card for full details.



Kelly Duplex Double Chain Drag with variable speed control. This machine is grain-tight—has flared side boards for extra capacity.

SINGLE & DOUBLE CHAIN DRAGS

As grain dump drags . . . as conveyors . . . as feeders for hammermills, corn shellers or other machinery—Kelly Duplex Chain Drags are unsurpassed for steady, even delivery of grain and ear corn. Single chain drags have V-trough construction—choice of wood or steel box. Double chain drags are made entirely of welded steel—are available with 12", 16", 20" or 24" wide beds. All drags can be made in any length with either single or double gear reduction . . . can be powered by motor or belt drive . . . and can be furnished with variable speed control. Mail card for full details.

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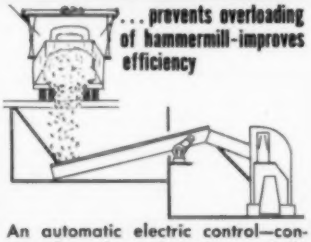
Chain Drag with Automatic Motor Control



. . . prevents overloading of hammermill-improves efficiency

An automatic electric control—connected to the motor of your Kelly Duplex Chain Drag and to the motor of your hammermill—gives complete, positive control over hammermill feeding. If the hammermill motor begins to show an overload due to excessively rapid feeding—the motor on the drag ***automatically*** stops until the load passes—then ***automatically*** starts again.

Dick Taylor

Ingenuity of Southland's long-time superintendent has contributed much to progress of oil milling.

DICK TAYLOR is one of the oil mill superintendents whose ingenuity has contributed much to oilseed processing—and he has the distinction of having been with Southland Cotton Oil Co. mills longer than any other employee.

Taylor, Southland assistant general superintendent, was the subject of a feature article recently in Paymaster, Western Cotton Oil Co. and Southland employee publication. He is in charge of safety, sanitation and fire prevention.

Dick started as a night engine oiler at the Shreveport mill and was general superintendent from 1925 to 1955.

Excerpts from the article in Paymaster follow:

Born on a farm on the Marion-Harrison county line (near Jefferson, Texas), Dick grew up in a cotton gin. His father, J. R. 'Bob" Taylor, owned and operated a small gin.

Dick started working in his dad's gin when he was seven years old.

"I helped cart wood up to where the fireman could get it and put it in the furnace under the boiler," he remembers.

"We had one gin stand, upstairs, and the seed fell through a hole in the floor and had to be raked back. One seven-year-old boy could rake seed faster than one gin stand could put it out."

• **Sucked Customers Away** — Later, Dick's dad sold the gin and bought another in Jefferson. Dick describes it as much like the previous one . . . "an old-fashioned, hand-fed gin . . . we didn't have suction.

"About that time the Kentucky Cotton Oil Co. built a cotton oil mill in Jefferson. And they also built a modern gin . . . for those days. That gin had suction.

"Besides sucking all the cotton out of the wagons, it sucked all of dad's customers down to that gin. Dad had to go out of business."

The sight of that new mill at Jefferson made a lasting impression on young Dick.

"After seeing that mill and how much there was to it," says Dick, "I made up my mind that if I ever had a chance to go to work in an oil mill I was gonna jump at it."

And jump at it he did . . . for outside of serving an apprenticeship in a machine shop when he was 15, Dick has spent his entire career with Southland.

While he was still working at his first job at the Shreveport mill, he began taking a business course at Draughon's Business College after working hours, and in the dormant season went to Fort Worth and took an additional course in shorthand. The study of bookkeeping paid off, for he was sent to the Paris mill and general office as cashier.

After three or four years on that job, the company built a shop . . . to build some of the mill parts needed and to repair and utilize others by bringing them up to date. Dick ran the shop for a couple of years. Later on came his promotion to the post of general superintendent.

When Dick took over the general superintendent's job, the company had oil mills at Oklahoma City, Chandler and Wynnewood in Oklahoma, while its Texas mills were located at Decatur, Arlington, Waxahachie, Temple, Corsicana and Paris. In addition to these were the mills at Shreveport, La. and Jackson, Miss.

• **Autos Were Uncertain**—"When I first went around to the mills I took a train," says Dick. "Why, you just couldn't get there in a car. It was a day's trip in a car just from Paris to Dallas.

"I remember one time Mr. Wilbor (president and general manager at that time) and I were going to Dallas from Paris, in his Cadillac. It was about 1921 or '22. He HAD to be in Dallas the next morning. Well, we got there two days later. First we got stuck in the mud and finally had to get six mules to drag us in to Plano. We got from there almost to Richardson under our own power, when the clutch burned out. Mr. Wilbor got out and walked up to a farm house and called Dallas for a mechanic. While he was gone I fixed the car. So, when he got back we went off and didn't wait for the mechanic. We finally made it to Dallas."

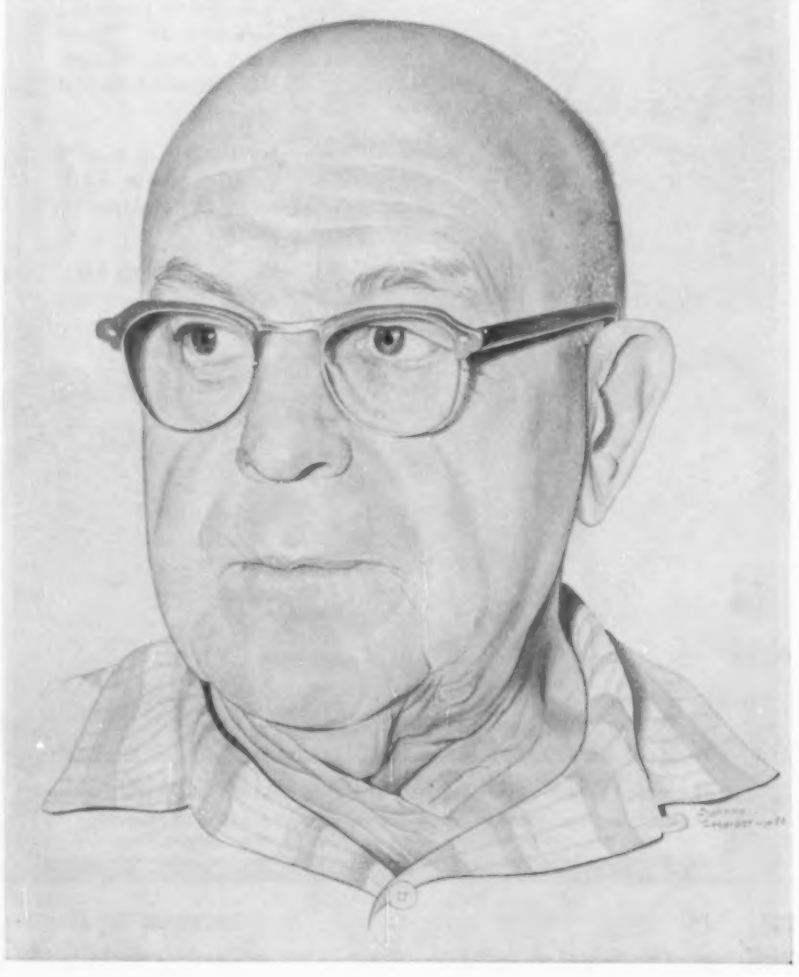
Most of Dick's driving in those days was in a Model T. They were simple to operate, but they had a major drawback . . . they all looked just alike . . . which led to a rather embarrassing moment for Dick while he was at Paris.

Taking a company-owned Model T one day, he drove to the depot and then to the bank. Finishing his business at the bank, he came out, got in a car, and drove back to the mill. A short while later, a somewhat indignant citizen showed up at the mill to claim his car. Dick had taken the wrong one.

Dick later became the owner of a motorcycle. He went to Dallas to get it and proceeded to drive it back home. Since there were practically no roads, he came around a bend to find a truckload of gravel directly in his path. That was where the motorcycle and Dick parted company, with Dick going over the fence on one side, while the 'cycle went in the opposite direction.

After that, Dick rode his motorcycle in town, only.

He now averages three to five thous-



THIS SKETCH of Dick Taylor was drawn by Johnnie Harper, editor of The Paymaster, employee publication.

and miles a month visiting the Southland mills. Also included in his job are visits to the Southland gins.

Dick conducts a safety meeting at each of the mills about once a month.

Dick's own record incidentally, is the best safety guide that he could give anyone in the organization, for, in all the years that he has been with the company, he has never had a lost-time accident of any kind.

• **Many Innovations** — Dick is hesitant to talk about the many innovations which have come about under his direction in oil milling processes and procedures. He was responsible for inventing a number of things. But, as Dick tells it . . .

"Now, don't you put that down as 'I.' You put that down as 'WE,' the way I'm saying it!"

Okay, Dick.

"We were the first to use more than 106 saws on a linter machine. We put 140. (And, incidentally, got a patent on it.)

"We were the first to clean lint that I know anything about. And we're having more trouble cleaning it now than when we first started. You might add that they had better cotton then . . . didn't bring the whole cotton patch.

"We were the first to put individual drives on linter machines. That is almost universally used now.

"We were the first people, I think, who ever made more than two cuts of lint. Multiple cuts are also in general use now."

Dick has always been interested in technical things and even now has a small machine shop, complete with a small lathe, drill press and tool grinder.

The favorite story among the Southland family has to do with Dick and his dog "Sputnik." Dick took him to Jackson with him on a trip and, having to make as overnight trip from there, decided to leave him for the night at the Jackson mill. Placing him in the mill supply room in the care of Raymond Rust, night superintendent, Dick told Raymond to be very careful and **not let him get out.** About nine o'clock that night, one of the men from the mill came running to tell Raymond that he had seen Taylor's dog go out the front gate and down the street. Raymond and some others went tearing out and chased the dog all over that section of Jackson. After a lengthy and spirited chase, the dog was cornered and the captors returned, breathless, to the mill supply room. Opening the door to let the dog in, they looked over into the far corner of the room, and there . . . quiet and contented . . . sat "Sputnik"!

Dick's hobbies are boat-building, and photography. Perhaps the part about boat-building should be past tense, for Dick relegates it to the era of his "younger days." His real masterpiece was built around 1930. It was a beautiful 22-foot runabout, with a 100 horsepower Continental motor. It had a cypress bottom, with redwood upper structure. The decks and inner trimming were black walnut.

Dick still pursues his photography and has hundreds of beautiful pictures to vouch for his prowess as a shutterbug. He has a number of cameras, including a 3-D Stereo camera, a Leica and Polaroid Land camera. He is partial to landscapes and has a really beautiful collection of color slides. He has a complete darkroom adjacent to his office, where he develops and prints all of his black-and-white pictures. The room is also equipped with an enlarger and slide projector.

A love for hunting and fishing has not abated over the years, and Dick still goes fishing and hunting "whenever there's water and woods available." We can imagine that his Southland cronies doubly enjoy an outing with Dick, for we are informed that he is a top-drawer cook.

With all his interests, it is easy to see that the subject closest to Dick's heart is Southland Cotton Oil Co. . . . its people and its operations. His innate warmth and genuine affection for the Southland family have made him a real friend to about every person in the organization.

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Anhydrous Ammonia Plant To Be Built in Arizona

C. P. Gould of Litchfield Park, Ariz., president of Southwestern Agrochemical Corp., and Owen Cooper of Yazoo City, Miss., chairman of the board of the First Mississippi Corp., have announced that construction will begin immediately on a 60-ton-per-day anhydrous ammonia plant in Arizona.

A new Arizona chemical company will be formed by the two participating corporations to own and operate the new facility. The plant will be located in Chandler and will cost an estimated $4 million.

Chemical Construction Co. of New York City is designing the plant and will begin construction early in 1959.

Crushers Know Nike Notables

THREE of the men who participated in this Nike installation ceremony at Terrell, Texas, have names well known in the cotton oil industry. Shown, left to right, are Terrell's Mayor J. W. Shepard, Jr., Colonel Leslie J. Staub, Speaker of the House Sam Rayburn, Lieutenant-General Guy S. Meloy, Jr., and Brigadier General William Whipple. Mayor Shepard was in the oil mill industry 42 years at Plano, Dallas and Terrell until he retired; Speaker Rayburn's brother, Dick, also was with oil milling and ginning until he retired; and General Meloy is the son of the retired USDA leader who was instrumental in establishing cottonseed grading and worked closely with cottonseed crushers for many years.

• Oklahoma Ginners Set Meetings

OKLAHOMA Cotton Ginners' Association has scheduled its district meetings for early January.

Districts 10 and 13 will meet Jan. 5 at 6:30 p.m. at Texhoma Lodge with Tim Cotner, Durant, in charge.

District 12 will meet Jan. 6, at 12 noon in the Pioneer Room of the Severs Hotel in Muskogee. G. N. Irish will be in charge.

January 12, at 6:30 p.m., Districts 1 and 5 will meet in the Town House in Elk City, with B. M. Hager, Elk City in charge.

Quartz Mt. Lodge will be the scene, Jan. 13, at 6:30 p.m. of the meeting of Districts 2, 3, 4, and 8 with Bob Davis of Altus in charge.

Districts 6, 7, 9 and 11, will meet Jan. 15 at 10 a.m. in the Chickasha Hotel in Chickasha, with Loyn Marvel of Anadarko in charge.

Meals will be served at all meetings.

Seek To Form Union

An organization for the Federal, State, County and Municipal Employees' Association, AFL-CIO, has met with Texas Department of Agriculture employees to discuss forming a local union.

More Supplements Needed

Prolonged dry weather in California's San Joaquin Valley will force ranchmen to do more supplemental feeding than usual, The Fresno Bee reports. Rain now would be too late to help grass.

Here's What Ginners Say About

A & C Rubber Lined FAN SCROLLS and GIN ELBOWS

"These rubber linings are really tough. During the time we've used our present elbows, we'd have been down five or six times, with unlined elbows."

BILL PERKINS, Mgr.
WIENKE GIN
PETERSBURG, TEXAS

"A rubber lined scroll was installed two years ago and is still in good shape. This is about three times the wear we'd get out of an unlined scroll."

D. T. PIERCE, Mgr.
FAYMASTER GIN
SNYDER, TEXAS

"Using unlined elbows, I've had gins down for replacement three and four times a season. With A & C elbows, I've gone as long as three years without changing."

J. E. GRAY, Mgr.
SLAYTON CO-OP GIN
SLAYTON, TEXAS

The experience of these three gin men with rubber-lined scrolls and elbows is being duplicated in gins all over the country. Every year, progressive gin operators are saving thousands of dollars in replacements and costly "down" time because of the amazing abrasive-resistant quality of rubber lining. In test after test, rubber-lined equipment has outlasted unlined equipment by as much as nine to one! Take the advice of men who know from experience. A & C rubber-lined scrolls and elbows put you 'way ahead in time, production and money. Order your next scrolls and elbows from A & C.

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MUST REDUCE PRICES

Soybeans Are In Trouble

Economist says industry should take its medicine now, in large enough dose, so oil can compete and meal can be produced in quantity needed for livestock feeds.

SOYBEANS are in trouble. The market won't absorb present production. The soybean industry should take its medicine now—in a large enough dose to cure its ills.

This is the warning from T. A. Hieronymus, University of Illinois economist. A summary of his analysis of the current soybean situation follows:

If the expanding need for high-protein concentrates is to be met, there must be further expansion of soybean production. The trouble lies with the oil fraction. Oil production has been expanded past its market size at current prices. The market for soybean oil can be expanded further only by a major reduction in price.

Soybeans must be allowed to sell at prices that will permit the continued expansion of the market for soybean meal and that will permit oil to complete effectively with other fats and oils for the existing world market.

Soybean production in 1958 is in excess of requirements. Part of the increase in production is the result of an increase in acreage, and part is the result of unusually favorable growing conditions. The problem has been brought on rapidly because of the weather. This may be fortunate because it so clearly illustrates the nature of the problem as it will likely exist in the years ahead. A reasonable estimate of the potential use of meal in 1958-59 indicates a crush of 385 million bushels, leaving an increase in carry-over of 45 million bushels from this crop.

A crush of 385 million soybeans would produce 4,235,000,000 pounds of oil. If we allocate projected production of lard and cottonseed oil between domestic use and exports, and if we assume that domestic use of edible fats and oils per capita will remain at the same level as it has in recent years, 2,689,000,000 pounds of soybean oil will be needed in the domestic market. This would leave 1,543,000,000 pounds to be exported. If we take into account the projected exports of 1,737,000,000 pounds of lard, cottonseed oil, and soybeans, a total export of 3,280,000,000 pounds will be needed. The average for the period 1952-56 was 1,894,000,000 pounds. In 1956-57 exports of the three totaled 2,779,000,000 pounds, and in 1957-58 about 2,422,000,000 pounds.

General world conditions in fats and oils are such this year that an export of the big three at the 1956-57 record level would be a very optimistic forecast. Such an amount would result in an export of 1,042,000,000 pounds of soybean oil and require a crush of 339 million bushels of soybeans.

On the meal side, a crush of 385 million can be used; and on the oil side, 339 million. The result of this 46-million-bushel gap will be some kind of compromise. There will be continued downward pressure on oil and upward pressure on meal as a result of the support price for soybeans. The combined value of the two must be enough more than the price of soybeans to encourage processing.

The effect of the price of oil and meal pivoting around the loan will be a smaller crush than would exist without the loan. Without a support price on soybeans, we would produce the needed meal and let the oil price decline to a point at which oil would find its way into export and into domestic inventory.

A second effect will be to push meal prices up to levels that will restrict use below the amount that would otherwise be used and to reduce the export of fats and oils.

• **Meal Market Expansion**—Production and use of soybean meal in the U.S. have expanded at a very rapid rate during the past 20 years. Production of other high-protein concentrates has increased very little, and production per protein-consuming animal unit is at the same level as it was 20 years ago.

The increase in protein concentrate consumption per animal unit has been asociated with a substantial and continuing increase in output per 100 pounds of feed fed. This increased productivity is especially notable in swine and poultry. Use of high proteins has increased greatly for these two classes of animals. The use of high-protein concentrates has been stable in the production of milk and beef.

Authorities say substantial deficits in protein still remain. It is estimated that in 1955 about 198 pounds of high proteins were needed per grain-consuming animal unit and the amount fed was 133 pounds, a deficit of 33 percent. Since 1955, consumption has increased by only a small amount.

Increased livestock numbers will require more protein, and increased feed grains will need to be supplemented by high-protein concentrates.

During the past 10 years, substantial inventories of feed grains have been accumulated under price support programs. If these supplies are used up in the years immediately ahead, large amounts of proteins will be required to supplement them.

When we combine all three of these market growth factors (current protein deficits, increased feed grain production, and inventory liquidation), our estimate of soybean meal market potential becomes fantastic. It is clear that if meal production is continued at the same rate in the decade ahead as it has in the decade ending, a shortage of high-protein concentrates will remain.

If this potential market is to be exploited, soybean meal must be reasonably priced. Its price must be close enough to feed grain prices to prevent synthetic substitutes from competing.

The export market for soybean meal as soybeans has a large growth potential. Whole soybeans are exported primarily to northern Europe and Japan. In Japan the meal fraction is used for human food. In Europe the meal fraction is used for livestock feed.

• **The Oil Problem**—Supplies of edible fats and oils are in very troublesome abundance in the U.S.

Production of fats and oils is increasing at a much faster rate than use. Production of fats and oils other than soybean oil is stable. Therefore increasing quantities of soybean oil are needed to maintain domestic per capita disappearance. But these increased requirements are very small in relation to the increase in soybean oil production.

Per capita disappearance of the four fats and oils is quite stable. The demand is extremely inelastic in current uses. The possibilities of expanding the domestic market appear very slight except at very low prices. It is possible that greater quantities of soybean oil could be used in drying-oil industries. But this would require a substitution of soybean oil for linseed oil, and flaxseed is in domestic surplus.

The mixed feed industry is using increasing quantities of fats in formula feeds. This market is supplied from inedible tallow, the price of which can go down to very low levels before it is driven out of production, because it is an otherwise waste by-product. The next lower use of soybean oil is likely to be as a chemical reagent. It is not clear what price would be required to open up this market, but it would put soybean oil very close to being a free good.

Price is a minor consideration in the production of butter, lard, and cottonseed oil. Nothing is accomplished in reducing competing domestic production by selling soybean oil cheaply in the domestic market.

The limited domestic market for soybean oil, the expanding market for soybean meal, and the fact that one cannot be produced without the other make the export market for edible fats and oils of paramount importance to the further growth and development of the soybean industry.

• **The Export Market**—Prior to World War II, the U.S. exported minor quantities of cottonseed oil and soybean oil and major quantities of lard. At the same time she was a major importer of other fats and oils, particularly copra,

so that she was a net importer.

Following World War II and the expansion of the soybean crop, the U.S. became a major supplier of fats and oils for Europe. A record high was reached in 1950-51. Exports fell off during the following two years with the de-stocking following the Korean war and with the cottonseed oil buying program of the USDA. This buying program tended to hold U.S. oil prices above world prices, as well as generally to support world oil prices.

In early 1954 the USDA initiated an oil sales program that liquidated its stocks in 18 to 20 months. This was mostly cottonseed oil and accounts for the large sales of cottonseed oil and the change in the cottonseed-soybean oil ratio between 1954-55 and 1957-58.

The sale of oil for foreign currency was initiated under Public Law 480 in the latter part of the 1954-55 crop year and got up to about 740 million pounds in 1957-58.

Exports for dollars and under I.C.A. grants reached a high of nearly 2,200,000,000 pounds in 1955-56. The decline in dollar volume in 1957-58 was the result of liquidation of stocks accumulated during the Suez crisis and the very large peanut crop, particularly in Africa, in 1957.

Until 1958-59 the problem of exporting the domestic surplus was solved by a dollar business of about two billion pounds per year and by P.L. 480 sales. The prospect that these two methods will accomplish the job in 1958-59 and the years ahead is extremely remote. The exportable surplus production has jumped from a troublesome 2,400,000,000 pounds in 1957-58 to a huge 3,900,000,000 in 1958-59. If we assume a dollar export market for 2,000,000,000 pounds, a P.L. 480 export of 1,900,000,000 pounds will be needed to avoid an increase in the carry-over of oil and soybeans. This program is 2.6 times as large as last year's. If the increase in meal use is projected to nine percent, which appears reasonable in view of the normal market growth and increases in livestock numbers, a total export of 3,300,000,000 pounds will be needed.

The remarkable increase in the size of the problem in 1958-59 is the result of (1) a sharp increase in soybean acreage, (2) unusually high soybean yields, (3) an increase in cotton production, and (4) a sharp increase in lard production. Three of these four factors need to be projected into the future if we are to appraise accurately the export problem. Feed production and carry-over supplies are large, pointing to increased hog production and hence to larger lard supplies in the future. Recent changes in legislation pertaining to cotton price programs indicate increased cottonseed oil production. The rapid expansion of soybean meal consumption at firm prices in relation to other feed prices points to the need for further increase in soybean acreage.

It is quite clear that the need to increase exports of edible fats and oils is not a temporarory one. The immediate problem presented by the 1958-59 situation must not be allowed to overshadow the long-term problem of increased oil exports.

• **Expanding the Export Market** — The key to increased exports over the long term is a reduction in the price of fats and oils. Cheap oil will accomplish two things:

1. It will stop further increases in the production of competing seed oils.
2. It will facilitate increases in the consumption of fats and oils in areas of the world where per capita consumption is low.

The areas of the world where per capita fat and oil consumption is low, and where incomes are low, are also the areas that supply fats and oils in world trade in competition with U.S. exports. Oil needs to be priced cheaply enough to retard competing production and make it possible for the world's poor people to afford to consume their own production. This would enable the U.S. to take a larger share of the import requirements of deficit areas.

The current troublesome level of world production of edible fats and oils has developed since 1950 chiefly as result of increased production in the following competing group. Production in this group continued upward at a rate greater than population growth during 1957 and 1958. Current levels of world oil prices are encouraging increases in production at a rate in excess of population growth.

Within this competing group, increases from 1950 to 1956 were as follows:

	Million pounds
Soybean oil	2,264
Peanut oil	1,417
Sunflower oil	1,967
Coconut oil	954
Palm kernel oil	47
Palm oil	124

The three fat and oil sources that offer the most problematic competition

(Continued on Page 37)

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Exclusive From Our Chitling Switch Bureau:

Ubberson's Outlook for '59

CHITLING SWITCH, ARK.
DEC. 26, 1958.

DERE MR. EDITOR:

Whenever a New Years comes around these here fellers that write for newspapers, magazines and etc always come out with a lot of talk about what happened last yr and what is going to happen in the new yr and in fact they jest about cover everything because these here writers are smart folks and I guess they help lots of folks do their thinking. So here comes Ubberson with his New Years talk and I aint going to let none of the high collared boys out write me because I aint smart and admit it and nobody is going to pay me no attention to what I say pro or con whatever that means. They aint no doubt about the election being the biggest thing that took place in 1958 and they aint no doubt about Nelson Rockefeller being the man of the yr but they might be some doubt about this here feller Nixon going to S.A. in 1959.

Now here I am going to put down my predictions for 1959 and I aint never seen a yr that ended in nine that anything very good happened so you might say that I am one of these here pessimistics. They is going to be more investigations and they is not going to be nothing done about what is found out except that a whole lot of govt. folks will be hired to put down the records and etc and they is going to be one hell of a battle in congress about rights of one sort or another and the whole thing is going to wind up in a 3rd party and if the Publicans put Rockefeller and anybody else but Nixon up you will see a Publican Pres, in 1960 like it or not. You know a lot of us fellers thought that when we got a Publican Ministration things would change and a whole lot of burecrats would be kicked out but you see what we got and what we got is the same thing only more of it and I dont know that we will ever half less of it. I perdict that this here stock market is going to go to hell on roller skates and dont ast me why because you already know. They is going to be little wars going on here and there about nothing and dont think that they is going to be a big one but if they is it will begin where we dont think it will jest like before. They is going to be more money spent on these here moon rockets and etc. and more money spent in Timbucktoo and other places to pertect our good will and trade when it could be spent drilling oil wells draining swamps building roads and etc which would mean more revenue for the U.S. to use to pay off some of this here money that we owe and they aint no end to that because I perdict that the govt debt is going to be bigger and better. The U.S. Supreme Court is going to keep on like they half been doing and it aint going to suit lots of folks but they cant do nothing about it as long as Congress dont do nothing and they aint going to. I tell you right now Mr. Editor that you better look out for these here yrs that end in nine and if you dont why jest dont say that I didnt tell you.

YOUR'N,

B. Ubberson.

USDA Announces Sales Policy on Flaxseed

A short-term sales policy for any 1958-crop California or Arizona flaxseed that may be taken over by the CCC after Jan. 31, 1959—maturity date for price-support loans on the commodity in the two states—has been announced by USDA.

Sales of the 1958-crop flaxseed from these states for domestic crushing or export will be made during February at the domestic market price but not less than the 1958-crop price-support rate plus a carrying charge of one and one-half cents per bushel. The March minimum sales price will be the 1958 loan rate plus a carrying charge of three cents per bushel. This sales policy will be in effect until March 31, 1959—maturity date for price-support loans on 1959-crop flaxseed in all other producing states.

A disposition program, including a pricing policy, for all 1958-crop flaxseed in CCC inventory on March 31, and subsequent acquisitions, will be announced by the Department prior to March 31.

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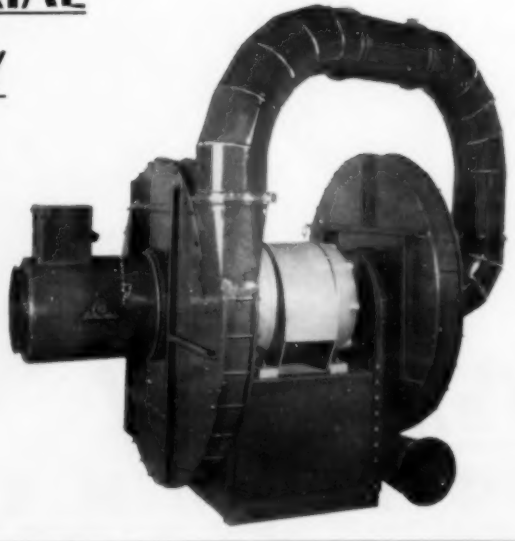

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Texas Gin Exhibits Drawing Jan. 10

The drawing for spaces for exhibits at Texas Cotton Ginners' Association convention will be held Saturday, Jan. 10, at the First National Bank Building in Dallas. Many exhibitors already have requested exhibit space and others desiring space should send their applications and checks to Edward H. Bush, president, Gin Machinery and Supply Association, Inc., not later than Jan. 7. His address is P.O. Box 7665, Dallas 26. The Gin Machinery Association will hold its annual meeting and election of officers at the time of the drawing on the morning of Jan. 10, and all exhibitors are invited to attend.

Texas Cotton Ginners' Association will meet April 5-7 at the State Fairgrounds in Dallas, and many special business and entertainment features are planned for ginners and their families and allied industry representatives. The convention annually attracts 5,000 persons or more and has approximately 50,000 square feet of exhibit space filled with displays of equipment and supplies for ginners.

Entertainment is provided, free, by the Gin Machinery and Supply Association, a nonprofit group. Officers include Donald F. Mitchell, John E. Mitchell Co., vice-president; A. G. Falk, Magnolia Petroleum Co., secretary; Walter B. Moore, The Cotton Gin and Oil Mill Press, treasurer; and Bush, who also is executive vice-president of Texas Ginners' Association. These officers serve as members of the machinery group's executive committee, along with U. H. Ohrmann, Texas Power & Light Co.; Carsey Manning, Stewart and Stevenson; and Ray Senter, Cotton Belt Gin Service, all of Dallas.

1959 Maid of Cotton To Be Named This Week

Tweny-one young beauties have been named finalists in the 1959 Maid of Cotton contest, the National Cotton Council announces. The girls, each a native of a cotton-producing state, will go to Memphis for two days of contest finals, Dec. 29 and 30. Finalists by states are:

From Arizona, Madilyn Buntz, Casa Grande; from Florida, Lael Jackson, Jacksonville; from Georgia, Martha Evans, Perry; and Beth Hunt, Baxley. From Kentucky, Martha Hall, Shelbyville; from Louisiana, Sylvia Brown, New Iberia; from Mississippi, Mary Swayze, Greenwood; from Missouri, Sarah Jane Melton, Malden; from North Carolina, Miranda Burnett, Greensboro.

From Oklahoma, Malinda Berry, Stillwater; from Tennessee, Joan Warren, Memphis; and Betty Lackey and Celeste Morrison, both of Nashville; from Texas, Betty Carpenter, Fort Worth; Carolina "Suzy" Jolliff, Dallas; Marcella McKenzie, Tyler; and Suzanne Schoenemann, Brenham.

These finalists were selected from hundreds of applications and photographs received in the Memphis office of the National Cotton Council. Four other girls, winners of state Maid of Cotton contests earlier this year, are automatic finalists.

They are: Alabama Maid of Cotton, Annette Nall, Georgiana; California Maid of Cotton, Carole Keppler, Los Angeles; New Mexico Maid of Cotton, Anna Jane Sitton, Carlsbad; and South Plains Maid of Cotton, Yvonne Skinner, Lubbock, Texas.

The day following her selection, the winner of the 1959 Maid of Cotton contest will depart for New York, where she will be outfitted in an all-cotton wardrobe created by the nation's top high-fashion designers.

In late January, she will fly to Nassau for the opening of an international fashion and good will tour that will be climaxed by an around-the-world journey next summer. Her global tour, which will include 14 stops in Europe, Asia, and the Far East, will follow visits to 30 major cities in the United States and Canada. At the end of her travels, she will be awarded a new car by the Memphis District Ford Dealers.

This is the twenty-first Maid contest and tour sponsored by the National Cotton Council, the Memphis Cotton Carnival Association, and the Cotton Exchanges of Memphis, New York, and New Orleans.

Wood-Hi Gin Names Officers

Wood-Hi Cooperative Gin at Inez, Texas, has named its new officers and board members. They include President Bruno J. Leita; Vice-President O. H. Sauer; Secretary Herbert V. Heller, and board members Albert Shumbera, H. J. Schoener, Fred Mikula and Ed Nurica. James Densman is the manager.

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FOR HIGHEST YIELD, COARSER FIBRE

Read what Carl Uland, Plano, Texas, has to say about Watson Stormproof Cotton

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FOR HIGHEST YIELD, COARSER FIBRE

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GARLAND, TEXAS

On Texas High Plains

Burs Can Pay Farmers $2,500,000 Yearly

Cotton burs could be worth $2,500,000 yearly to producers on the Texas High Plains, authorities estimate. Many cotton growers are getting their share of this value by returning the burs to their land after cotton is ginned.

About 400,000 tons of burs are produced annually in the Plains area. Each ton, Harvey Walker, Texas Experiment Substation, Lubbock, says, contains about 16 pounds of nitrogen, 8 pounds of phosphorous and 16 pounds of potash. These nutrients are worth about $6.50.

Burs also improve the physical condition of the soil and the use of burs, instead of burning them at gins, helps to reduce fire hazards at gins. These factors are causing more farmers and ginners to cooperate each season in programs to restore burs to the soils where they were produced.

In Floyd County of West Texas, for example, 20 gins are making burs available to farmers, A. W. Dalrymple, Soil Conservation Service, reports. Five gins have spreader trucks that haul and spread the burs for farmers for $2 to $3 per ton. Fifteen other gins are making burs available to farmers who will come and get them.

Dalrymple estimates that farmers spread an average of four to six tons of burs per acre.

A four-year test at the Lubbock Substation showed a six-ton per acre bur application increased annual irrigated cotton production by an average of 225 pounds of lint per acre.

The average production on land that received no application of burs was 502 pounds per acre, Walker says. Where burs were applied, the average annual production was 727 pounds of lint an acre.

Southern Cotton Shippers Schedule April Meeting

The Southern Cotton Association will hold its annual meeting, April 3, in the Peabody Hotel in Memphis, according to Earle Billings, secretary and general manager.

Directors will meet on April 2 and there will be a buffet and dance for the membership that evening.

The association is made up of shippers from Tennessee, Mississippi and Louisiana. Harold S. Grehan, vice-president of Volkart Brothers, Inc., New Orleans, is president.

Midway Gin Elects

Midway Gin and Grain Cooperative, Taft, Texas, has elected its new officers for its tenth season in business. C. C. Carroll, president, will be assisted by Max Floerke, Jr., vice-president, and L. R. Standlee, H. H. Lackey, L. E. Morris, Mercer T. Ivey, John Drozd and E. M. Schmidt. Manager is Irl J. Trout.

■ **PAUL H. WALSER, Temple, SCS deputy state conservationist, has been named "Man of the Year in Texas Agriculture" by The Progressive Farmer.**

Mason DuPre Promoted

A. MASON DUPRE became assistant to the administrator of USDA's Agricultural Research Administration, Washington, in December. He has been special assistant to Dr. C. H. Fisher, director, Southern Utilization Research and Development Division, New Orleans. DuPre succeeds Dr. Walter M. Scott, now director of the USDA PL 480 research in Europe and the Near East, with headquarters in Rome. DuPre has been with USDA since 1931 and has participated in much of the cotton utilization research development and evaluation.

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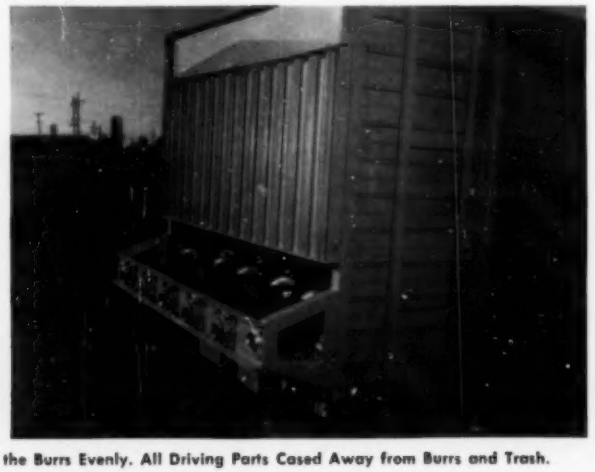

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SHOWN HERE are some of the Beltwide Cotton Production Conference leaders who participated in the opening session. Left to right are Robert R. Coker, president, Coker's Pedigreed Seed Co., Hartsville, S.C., who discussed boll weevils and production costs; Claude R. Welch, director, Production and Marketing Division, National Cotton Council, Memphis, who presided; Burris C. Jackson, chairman, Statewide Cotton Committee of Texas, Hillsboro, who welcomed the visitors; and J. D. Hays, vice-president, Alabama Farm Bureau Federation, Huntsville, general chairman of the Conference.

New Practices Outlined During Conference

Leaders in research, education and industry reviewed past cotton production progress and future needs at Houston, Dec. 17-18, at meeting which was sponsored by National Cotton Council and other groups.

INCREASING production efficiencies, while improving and preserving lint quality, was the theme which ran through the talks given at the 1958 Production Conference, Dec. 17-18 in Houston. The ever-increasing and costly problems of insects and weeds also received much attention.

National Cotton Council sponsors the conference, in cooperation with a large number of other organizations, including U.S. Department of Agriculture, land-grant colleges of the Cotton Belt, farm organizations, vocational agriculture teachers, the agricultural chemicals industry, and others.

The following summaries of addresses during the Conference constitute the official summary-proceedings, published through the cooperation of the Council, which distributes them, and The Cotton Gin and Oil Mill Press:

Welcome

BURRIS C. JACKSON,

Chairman, State Wide Cotton Committee of Texas, Hillsboro

Texas, the world's greatest cotton producing region, welcomes this Beltwide Cotton Production Conference, with its timely theme, "Growing Cotton for Profit and Markets."

Our greatest immediate problem is to get every allotted acre planted in 1950. This is of vital importance not only to the cotton industry, but to every community throughout the Cotton Belt. After this is done, it is essential that the cotton which we grow be produced for markets—it must be sold, instead of going into the government loan, if we are to perpetuate the cotton industry. At this moment, the government's barter program has completely demoralized foreign sales of U.S. cotton and has hurt merchants who have obtained cotton under the foreign sales program but cannot sell it.

(Editor's Note: A barter program statement prepared by Jackson is summarized elsewhere in this issue of The Press.)

Despite these problems, Texans have great faith in the future of cotton, and join with you in your dedication to exerting every effort to making cotton more profitable to the grower and more useful in the markets.

◆ ◆

Cotton Dynamics

J. D. HAYS,

Conference General Chairman and Vice-President, Alabama Farm Bureau Federation, Huntsville

The theme of this conference is "Growing Cotton for Profit and Markets." Most of the program deals with subjects which have to do with producing and marketing cotton more efficiently . . . with information on where we seem to stand in certain important areas of research . . . with opportunities we have for making better use of developments which scientific research has already given us. This conference is primarily concerned with trying to harness one of the forces that is so important to the

scheme of cotton dynamics . . . the science and technology of cotton production and marketing.

There is a viewpoint which holds that matters of science should be kept apart . . . that they belong to a separate world from that which must deal with politics, and with the problems of trying to make a profit. And, there is sound justification for this viewpoint, in the sense that if scientific effort is to be productive, it certainly needs to be applied to scientific objectives.

When we look at the whole picture, and at the role that research is playing, it seems clear that technical accomplishment is not quite an end in itself—that before this potent force can actually express itself, it must be transformed into economic opportunity—that in fact, it must be employed in such a way as to help temper some of the political forces which seem to have exerted so much influence on our industry's course. It adds to . . . instead of detracting from . . . the importance of research when we recognize how it fits into the politics and the economics of our industry's survival.

• **Legislative Battle** — When we look at the battle on farm legislation that took place in the last session of Congress, we can see one of the most striking of all examples of the vital tie-up between the forces represented by research and politics

Last year a good many of us were looking ahead, rather apprehensively, to a new session of the Congress. We were beginning to realize that the clock was about to run out. The kind of government programs that were then on the books were bringing us terribly close to disaster, and we simply had to make some changes if this industry expected to survive. Important changes were made. We now find ourselves with a farm program which reflects a rather difficult compromise between viewpoints which were pretty far apart.

There was a great deal of controversy and furor while the farm program was being debated in and out of Washington last spring and summer. This produced a lot of headlines. But strangely enough, one of the most important elements of that situation received very little public notice. Did you ever stop to think, that if research hadn't sparked an amazing amount of progress in our industry in recent years—and if research hadn't held out the promise of still faster progress in the years ahead—there surely wouldn't have been any legislation to reverse the suicidal course we were following?

If our cost structure were still geared to the half-bale yields, the extravagant use of labor, and the animal powered equipment typical of much of the Belt not so many years ago—if we'd still had that situation in 1958—all of the talk about bringing our prices more in line with competition wouldn't have made any pocketbook sense to a majority of cotton growers; and it would have been a rare Cotton Belt politician who would have dared to advocate anything except still higher price supports.

The fact that we are approaching a Beltwide yield of a bale per acre—the growing awareness and confidence that research is bringing us closer to the time when we will have really effective and economical methods of controlling insects, weeds, and diseases—these are the kind of things which made it feasible to bend our national farm policies toward more realistic objectives during 1958.

• **Sound Cotton Program** — Over the long run, a sound cotton program surely requires a pricing policy that makes our product fully competitive with foreign growths and with man-made fibers—a policy which gives our domestic textile industry and the U.S. consumer at least as favorable a treatment as we offer foreign customers. As we move in this direction, we probably will have to look at our national farm policy again, from time to time. But let's not kid ourselves into thinking that the whole answer to a sound cotton program will be found in any farm bill. After a quarter of a century of trying to legislate farm programs out of the way, surely we can see that a sound cotton program must rest on a more substantial base than politics alone can ever provide.

The real base for a sound cotton program is suggested by the theme for this conference: Growing Cotton for *Profits* and *Markets*. Perhaps legislation can help provide a favorable climate. But the real hope for being able to grow cotton profitably, and at prices which will assure us of a healthy market here and abroad, depends on our moving ahead with those things which will get our costs down and our quality up . . . research and the fuller use of research results . . . backed up with adequate sales promotion.

This faith in research as the road to our salvation is hardly a newly discovered faith. Over the years that I have been active in Council affairs, it seems to me that nearly every time cotton people get together, someone has made a speech about the importance of research. The idea of research for cutting costs and improving quality has always made a lot of sense to everyone connected to cotton.

Until recently, our faith in research has tended to be a somewhat passive faith. By and large, we have looked to our publicly financed programs—the USDA and our State Agricultural Colleges—to see to it that our research needs were met. We have tended to take pretty much for granted that the research programs of private industry—particularly the agricultural chemicals and equipment manufacturers—would lend a helping hand where problems of mutual concern were involved.

It's true that the cotton industry, through the Council and other organizations, has given a very large amount of support to the development of bigger and better programs of cotton research in agencies that are allied with us. But the industry's activities along this line have hardly measured up to the critical role that we are now asking research and technology to assume. We have about arrived at that point in the history of the cotton industry when faith must be matched with action. Never before has it been so urgent that we push ahead with developing research and educational programs for lowering costs and improving quality. The very future of our industry seems to depend on our doing so.

• **Time for Action** — With so much at stake, it is logical that the cotton industry itself should take a stronger hand in helping to shape its future through research. And this past year, the industry took a major step toward matching with action its avowed faith in research; it made available funds for the direct support of an expanded research effort in certain specific areas. As funds permit, we contemplate a more vigorous support of research.

The cotton industry is not proposing to assume any of the prerogatives or functions of the established research and educational programs in the colleges, the USDA, or in private industry. On the contrary, its purpose is to support and strengthen those established programs, and to complement them in such a way that we can move more decisively toward this objective of lower costs and better quality.

For quite a few years now we have been seeing fiber consumption in the free foreign world increase at a very rapid rate, as compared with our home market. Even with a rather dull textile business at present, cotton consumption in the free foreign world this year is running better than seven million bales ahead of 1950. The growth in rayon consumption has been at an even faster rate than for cotton. But if we had just held our historic share of the cotton part of that expanding foreign market, we would have seen our exports grow at the rate of half a million bales or so each year.

The only trouble is that we have not been sharing in the growth of these markets here and abroad. Competing textile goods and other consumer products have been enjoying these expanding markets which could have been ours; and this has happened mainly because of the fact that we have not been fully competitive on these three important fronts: price, quality and production. ◆ ◆

The Impact of the Boll Weevil On Cotton Production Costs

ROBERT R. COKER,

President, Coker's Pedigreed Seed Co., Hartsville, S. C.

It has now been 66 years since the cotton boll weevil crossed the Rio Grande near Brownsville, Texas, and entered U.S. territory. By 1894 it had spread to half a dozen counties in southern Texas, and afterward extended its range annually until by 1928 almost all of the important cotton producing sections, except the Western irrigated areas, had become infested. The area which is affected by this insect pest comprises 13 states from Virginia to Texas, and northward to the northern edges of the Belt in Missouri and Tennessee. From 10 to 12 million acres of cotton annually are planted in this area, producing between seven and nine million bales.

Well do I remember the arrival of the boll weevil in our section of South Carolina in the fall of 1920. The damage to the South Carolina crop that year was 31 percent. However, this, coupled with

the severe depression of 1920-21 and the loss to the boll weevil of 31 percent of the 1921 crop, created an economic disaster such as had not been seen since the years immediately following 1865. In 1921 the boll weevil took approximately one bale in three of the entire U.S. crop. The Sea Island cotton industry was wiped out because the late maturing, vigorous growing plants with their thin walled, easily punctured bolls furnished a natural and attractive food supply and habitation.

• **Boll Weevil Damage** — The Bureau of Agricultural Economics made annual estimates of the percent of potential cotton production prevented by the boll weevil for the years beginning in 1909 through 1954. Applying these percentages to the total crops during those 46 years and using U.S.D.A. statistics on the value at farm prices of the lint cotton and cottonseed produced from each crop, it is possible to arrive at a reasonably accurate estimate of the loss in bales of lint, tons of seed, and dollars directly attributable to boll weevil. It is a staggering figure. The totals show that during this 46-year period, 64,877,000 bales of cotton, and 27,917,000 tons of cottonseed were destroyed, valued at $7,680,000,000.

The 27,917,000 tons of cottonseed would have produced 1,102,000,000 gallons of refined cottonseed oil, and would have required 137,800 railroad tank cars to transport it. The emergency subsistence minimum of fats is estimated to be 22 pounds per capita annually. At this rate, the cottonseed oil lost due to boll weevils would have provided the minimum annual fat requirements for the 170 million people of the United States for two and one-third years.

The cottonseed lost could have produced 12,500,000 tons of high protein cottonseed meal, and 6,250,000 tons of cottonseed hulls. Cottonseed meal, used as a protein supplement along with the proper amount of silage, will produce one pound of beef for each three pounds of meal. Thus, the meal that was lost would have produced enough meat to have provided 49 pounds for every man, woman and child in the U.S.

The 64,877,000 bales of cotton destroyed by the boll weevil between 1909 and 1954, if placed end to end, would extend in a straight line 57,236 miles long, and would reach around the earth at the equator two and one-third times. If this cotton could have been manufactured into pocket handkerchiefs, it would have provided the 2,734,000,000 inhabitants of this planet—black white, yellow and red, men, women and children—with two dozen pocket handkerchiefs each.

It is significant and discouraging to note that in spite of the development of new and better insecticides and better control methods, during recent years, the boll weevil problems, especially in seasons of high rainfall, is hardly less serious than during the early years. For example, for the five-year period 1949-1953, the boll weevil destroyed a total of 9,250,000 bales of cotton and 3,750,000 tons of cottonseed valued at $1,810,000,000, or an annual loss amounting to $363 million.

Entomologists of the USDA have estimated that annually about three-fourths of the cotton crop of the 10 million acres in the boll weevil belt is poisoned in an effort to control the insect. The cost of poisoning, depending on number of applications and materials used, varies from a few dollars upward to $50 or more per acre. Assuming an average expenditure of only $10 per acre on the 7,500,000 acres poisoned, we have a total annual out-of-pocket expenditure of $75 million for poisoning.

Merged Conference, Jan. 14-15, 1960

A merged Beltwide Cotton Production-Mechanization Conference will be held in Memphis on Jan. 14-15, 1960, the National Cotton Council, and others who have sponsored the Cotton Production Conference and Mechanization Conference as separate meetings, have announced. The 1960 Conference will be preceded by preliminary technical meetings on Jan. 11-12-13, and will be held at the Peabody Hotel.

• **Boll Weevil Costs** — While it is difficult to place anything like an accurate dollars per acre cost on factors, it is reasonable to assume that the sum total of them would amount to decreased yields and value of at least $5.00 per acre. Five dollars per acre on the 10 million acres of the boll weevil belt amounts to $50 million, plus the $75 million spent on poison, plus the $167 million average annual loss for the past 46 years, brings the total to $292 million, which I feel is a most conservative figure.

Prior to 1947 the Bureau of Agricultural Economics of the USDA published figures on the costs of producing cotton throughout the Belt. For the five year period, 1942-1946, these figures showed an average gross profit for the entire Belt of 5.3 cents per pound of cotton produced. Assuming an income loss of only $20 per acre due to boll weevil, and using an average yield figure of 400 pounds lint per acre, we come up with the figure of five cents per pound loss in potential income. It seems reasonable to believe, therefore, that the cotton boll weevil has taken approximately 50 percent of the potential profit from cotton growing from those areas affected by it.

In 1896 the first federal appropriation for boll weevil investigations was made, and it was for the modest amount of $2,000. For the 62-year period beginning with that date and ending in 1957, the total federal appropriations for the boll weevil, including federal grants to states, amount to $4,162,000. This is a yearly average of $67,000 to be used in seeking solutions to a $167 million problem. The dollars appropriated annually for research, therefore, amounted to four-hundredths of one percent of the amount lost each year through damage of this insect. In other words, *we have been spending, on the average, four cents for research for each* $100 *of boll weevil loss!*

When we contrast this with the many million dollars appropriated by the federal government for such things as grasshopper eradication and control, fire ant eradication, and many others, and when we consider further the relative economic damage done by these insect pests in comparison with the boll weevil, we are faced with the conclusion that the boll weevil problem has been seriously neglected. Total federal funds appropriated for pink bollworm from 1917--1955 have amounted to more than $32 million, and have been perhaps largely responsible for holding the annual loss from that insect down to approximately $1 million per year. This money has been well spent and most worthwhile, but it strikingly emphasizes the neglect of the boll weevil problem.

We cannot, in fairness, lay all of the blame for our present plight and for our continuing heavy annual cotton insect losses on the failure of the federal government to provide a more adequate research program. We have failed to properly use the information which we have had available for a long time, we have failed to coordinate our insect control efforts, we have been at fault in not going to Congress as a united cotton industry to seek the help we so badly need and deserve.

Thanks to the efforts of our Southern friends on the Agricultural Appropriations Committees of the Senate and House, an additional $125,000 was appropriated for cotton insect investigations for the fiscal year beginning July 1, 1958. This represents almost a doubling of the funds, and while only a drop in the bucket of the amount needed, it is a splendid step in the right direction.

• **Future Research Needs** — As most of you know there has been a difference of opinion among some of the research scientists themselves and others as to the best means of controlling the cotton boll weevil. One group believes in delaying poison applications until approximately one-fourth of the cotton squares are infested, and then beginning heavy and regular poison applications. Another group has become convinced of the value of beginning poison applications early in order to destroy the rather limited number of over-wintered weevils before they can attack the young cotton and lay eggs to begin a new generation.

The problem of the cotton boll weevil engaged the serious interest and attention of my father, the late David R. Coker, for a period of time beginning several years prior to the time of its apperance in South Carolina, until his death in 1938. At his direction, the scientists of our company conducted extensive and exhaustive tests and experiments in boll weevil control methods, beginning in 1921 and extending over many years. We gave the then recommended government dusting formula a series of thorough trials. This recommendation called for the application to the cotton plant of large quantities of calcium arsenate in dust form at intervals of a few days between applications, beginning when 10 to 15 percent of the squares had been punctured. We were forced to the conclusion that, although that method possessed features of undoubted merit, controlling the weevil admirably under certain conditions, it was not a solution to the problem of the weevil for several reasons, the most important one being that it permitted the build-up of boll weevil population to such a dangerous level that adequate control was impossible in the event of a period of rainy weather preventing the frequent and regular poisonings which were required.

Our investigations and the practical experience of many thousands of farmers over the Belt convinced us that the first and most important phase of an effective weevil control program consisted of making poison applications to the young cotton to destroy the compara-

tively few surviving, over-wintered weevils *before* they could lay their eggs in the new squares and start another generation—thus literally nipping them in the bud. While this early poisoning has advantages to the individual grower using it, its effectiveness is multiplied as it is employed over larger and larger areas, since in this way the build-up of weevil numbers is delayed, postponing migration and permitting valuable extra weeks for cotton to fruit and produce. Experience has shown that the more community and area-wide cooperation which can be obtained in an early poisoning program, the fewer the number of later poisonings that will be required.

It is indeed fortunate for the cotton growers of the South that today there is greater and more complete agreement on the how, when and why of fighting cotton insects. The great majority of the 13 states of the area afflicted with the boll weevil problem agree that we must hit them early, hit them hard and keep hitting them as long as necessary to make the maximum yields and to use the best materials and equipment available. If we can all unite on a carefully planned, intelligent, South-wide cotton insect control program, I am convinced that the results will be beyond our fondest hopes and expectations.

We must do the best we can with the experience and knowledge we have now available to produce the biggest, best and most economical crops possible, and *at the same time*, exert a united effort to bring to the Congress a realization of its responsibility to provide fully adequate funds to provide badly needed additional research facilities and to finance a program of the size which the problem justifies. We must have a vastly stepped up program of basic and applied research which will hold a reasonable hope of some day removing from around the necks of Southern cotton growers the millstone of needless insect losses and excessive production costs. Then will dawn a new day for cotton and that great crop will again make its full and rightful contribution to the economy of the Southland and of the nation, and an ever expanding acreage, profitably produced at competitive prices, will be required to meet the needs of our rapidly expanding population.

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Good Weed Control For Efficient Cotton Production

DR. W. C. SHAW,

Head, Weed Control in Crops Section, USDA, Beltsville, Md.

The need for efficient and economical methods of controlling weeds in cotton is the single most important technical production problem facing the cotton industry today. Weeds are among the greatest contributors to cotton production costs. They compete with cotton for water, light, and mineral nutrients. Weeds increase the cost of labor and equipment, reduce the quantity and quality of cotton and harbor insects and diseases which damage cotton.

Studies on the cost of controlling weeds in cotton which have been conducted by USDA scientists indicate that it costs an average of $18.30 per acre for conventional methods of weed control requiring an average of 27 man-hours per acre, as compared to a cost of $13 per acre and 12 man-hours per acre using the present chemical methods. These data also indicate that cotton producers on the average can save approximately $5 per acre by using chemical methods of weed control as compared to conventional methods.

In reviewing data on the cost of controlling weeds in cotton it appears that producers will have to make a fundamental decision regarding their objectives in cotton production. If cotton production is to be an efficient farm enterprise, producers will have to decide whether to produce cotton as an efficient and economical source of fiber and oil or whether to produce it as a commodity through which to market a cheap source of labor.

• **Weed Control Research** — If we review the weed control research program in cotton, we find that our progress has been closely correlated with advances in other production practices. But progress in weed control occurred much slower and at a much later date than many of the other crop production practices. Nevertheless, in the past few years outstanding accomplishments in the development of weed control practices have occurred. Some of the most significant accomplishments include: (1) the development of tractor powered equipment for more efficient seedbed preparation, tillage, and cultivation, (2) the development of pre-emergence chemical weed control treatments (3) the development of post-emergence chemical treatments and (4) the development of flaming techniques for weed control.

Outstanding progress has also been made in basic research investigations on the control of weeds in cotton. The discovery of the differential tolerance of cotton hypocotyls and cotton leaves to herbicides was one of the most outstanding accomplishments, not only in cotton weed research, but in the entire field of weed control. This discovery resulted in the introduction of directional post-emergence spraying for weed control in growing crops. The results of this basic research still promise to be one of the most fundamental accomplishments in the field of weed control.

Excellent progress has also made in developing fundamental information on the site and mechanisms of action of the N-phenylcarbamates, phenylurea compounds, triazine herbicides, 2,2-dichloropropionic acid (dalapon), the herbicidal oils, and other chemicals used for weed control in cotton. Much progress has also been made in fundamental studies on the penetration, movement, persistance, and decomposition of herbicides in soils and the effects of soil applied herbicides on subsequent crops grown in rotation.

• **Future Research Needs**—Mechanized production can not advance any faster than the limiting factor—weed control. More effective, more consistent, more economical, and more efficient weed control methods will be required if the annual losses due to weeds are to be reduced, and mechanized cotton production is to become a reality.

In attempting to determine how research may result in supplying better weed control methods for more efficient cotton production, we must recognize that we are now entering a new era which involves the utilization of various forms of energy, not only to control weeds, but also to control insects and diseases, and for crop protection and crop production in a wide variety of ways. Increasing emphasis on basic research and educational programs will be required if we are to utilize the chemical energy of herbicides most effectively in the future.

If we are to use the chemical energy of herbicide molecules efficiently, more original research thinking will be required. A pioneering research effort is needed with less emphasis on comformity based on past research results.

We must keep in mind that weeds are a total farm liability and all crops grown on the farm are subject to their competition. It would seem logical in our future thinking, to give greater consideration to weed control problems on the farm as a farm unit, rather than limit research thinking to the control of weeds in a single crop. We need to distribute the costs of weed control to all crops grown on the farm, rather than charge all costs to a single crop. The cost of controlling weeds in cotton undoubtedly appears high because only the cotton crop in the current year is being considered rather than the total weed problem in all crops grown on the farm.

• **Recent Advances in Research** — The limitations of the current chemical, cultural, and combination weed control practices in cotton are well understood and research is being conducted to develop information which will aid in reducing the limitations of these practices.

Weed research scientists are in general agreement that one of the most critical needs in weed control in cotton is the development of a systemic residual type selective directed post-emergence herbicide. Steady progress has been made in developing a herbicide which meet these prerequisites. Starting with the discovery of the differential tolerance of the cotton hypocotyl to various herbicides, several chemicals have been evaluated for their effectiveness as directed post-emergence sprays.

The first triazine herbicides introduced were CDT and simazin. Neither of these compounds showed outstanding promise for the pre-emergence control of weeds in cotton. However, research conducted at Stoneville, Miss., has indicated that CDT is promising as a di-

1,000 Will Attend Council Meeting

Four major program division committees—Production and Marketing, Utilization Research, Sales Promotion and Foreign Trade—will present recommendations on the program of the National Cotton Council's twenty-first annual meeting. About 1,000 persons will attend, Feb. 9-10 at the Dinkler Plaza Hotel in Atlanta. Harry S. Baker, Fresno, Calif., is president, and will become board chairman when a new president is chosen at Atlanta. Many ginners and crushers will attend, also, the Southeastern Gin Suppliers' Exhibit, Feb. 5-7, and the National Cotton Ginners' Association meeting Feb. 8, in Atlanta.

rected selective post-emergence residual-type herbicide in cotton.

Early in 1957, an intensive systematic evaluation research program was initiated at Beltsville, Md. to develop improved herbicides for pre-and post-emergence weed control in cotton. In 1957 and again in 1958, two of the new substituted triazine derivatives showed outstanding preliminary promise for the pre-emergence control of weeds in cotton. Plans are now being developed to evaluate both of these compounds as pre-emergence sprays for weed control in cotton under a wide variety of soil and climatic conditions. In 1958, four additional substituted triazines showed excellent promise for the selective post-emergence control of weeds when applied as directed sprays in cotton.

• **Future Progress in Research** — Too many people have the impression that all basic investigations are highly technical and unrelated to the development of weed control practices in cotton. This impression should be corrected. Basic research may be complex or it may be simple. It is basic so long as it is designed to reveal what causes what and how it does it. Much of the research in weed control should and must include fundamental investigations of an interpretive character if more efficient weed control practices are to be developed in cotton in the future.

None of us would attempt to predict what new discoveries might develop in weed control from intensive fundamental research involving the fields of chemistry, plant physiology, genetics, crops and soil science, and agricultural engineering. We can be certain, however, that unless fundamental and applied studies are brought into better balance and expanded, applied studies and the development of weed control practices in cotton will suffer. It is common knowledge that if a seed is to germinate a number of environmental conditions must be met prior to germination. If these conditions do not occur the seed does not germinate. When basic research is inadequate the shut-off period in scientific developments is not as immediate and definite as with the germination of a seed, but it is almost as certain in the long run. Yet all of us are keenly aware of the difficulties involved in developing and obtaining support for fundamental research programs.

I am convinced that our agricultural progress and especially our weed control progress will be characterized by the discovery, development, and utilization of more efficient forms of energy in the future. The adaptability of chemical energy for controlling weeds offers almost unlimited possibilities for improving the efficiency of weed control in cotton. It thus seems that our future rate of progress will be largely determined by: (1) the discovery of more selective, more specific, better translocated, more efficient, better formulated, and more economical herbicides, (2) a basic fundamental understanding of the effects of chemicals on plant growth and soils, (3) our ingenuity in supplementing and combining chemical and cultural practices, (4) a fundamental understanding of the limitations of our current weed control practices and (5) the development of new and more efficient weed control techniques and the discovery of more effective and more efficient sources of energy for selective weed control.

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Closing the Gap In Plant Food

DR. MOYLE S. WILLIAMS,

Chief Agricultural Economist, National Plant Food Institute, Washington

There remains a substantial gap between the amount of plant food that research indicates should be used and that actually being used. There is evidence that the gap is being narrowed, but at a much slower pace than many think necessary if cotton farmers are to enjoy profitable returns. As nearly as I can tell by some rough calculations, farmers are now using only about 60 percent of the plant food that the Experiment Stations in the 16 Cotton Belt States indicate would be needed for most efficient production. Of course, this increase in the use of plant food would have to be combined with other good management practices that would permit the effective utilization of the fertilizer applied.

There is a great temptation on my part to become involved in analysis of the present situation in terms of plant food use and to attempt to project how much might be used under different conditions. Since this is a very hazardous venture at the best, I will restrict my remarks to a look at how the gap in plant food use might be closed more rapidly. This approach assumes that you will accept that such a gap does exist and that it is desirable that farmers be encouraged to use plant food at the rates approximating those recommended by their Experiment Stations.

• **Farmers' Attitudes** — The National Plant Food Institute has been concerned about the gap between plant food use of what is recommended and what farmers actually are using. To attempt to get a better insight into why such a gap exists and what can be done about narrowing it, our organization engaged a private research organization, to make a survey of "Farmers' Attitudes Toward the Use of Fertilizer."

I believe a brief summary of some of the results and conclusions from this survey will be of interest to those interested in encouraging the adoption of new and more efficient production practices for cotton. While most of the study is restricted to fertilizer, I believe some of the results are very revealing in understanding farmers' attitudes toward other production practices.

• **Survey Results** — The results of this survey may be summarized in the following points:

1. There appear to be three major barriers to increased plant food use. These barriers are (a) lack of knowledge, (b) lack of money (real and/or psychological), and (c) fear of adverse results and loss of social standing.
2. When a farmer receives information about fertilizer which he understands and believes, he usually makes intelligent use of it.
3. Farmers' knowledge about fertilizer is surprisingly low.
4. Farmers trust their agricultural colleges as sources of practical information, but they more often consult other sources—especially dealers and neighbors—before buying fertilizer.
5. The old stand-by, farm demonstrations, still appears to be one of the best teaching devices for the average farmer, and especially for the "slow adopter."
6. Soil tests appear to be one of the most important teaching aids.
7. Farmers generally do not translate

Contract Signed for Oil Mill

SHOWN HERE are officials who recently signed a contract for equipment for a 200-tons-per-day soybean oil mill to be built by Crawford County Farmers' Co-operative at Van Buren, Ark. Taken at the French Oil Mill Machinery Co. headquarters, Piqua, Ohio, the picture shows, left to right: Dean Bredeson, French representative at Memphis; Jack White, general manager of Farmers' Co-op; Charlie Upton, vice-president and general manager of French; and Alfred French, vice-president of French. This plant, to be ready for the 1959 season, is of the latest type basket extraction, employing equipment to manufacture 50 percent protein soybean meal. The process equipment includes the patented French extractor and desolventizer-toaster unit. It has been designed under the supervision of Ralph Hutchins, technical director of solvent extraction for French. He has participated in the design of 68 similar plants in the U.S. Contract negotiations have been carried on between Bredeson and White as directed by the board of directors: Roy Matthews, president; W. F. Arnold, vice-president; T. O. Boatright, secretary-treasurer; J. O. McClure, J. W. Johns, E. L. Kipler, Ernest Allen, Claude Dean, and Hal Brewer.

use of plant food into terms of costs and returns.

8. Mass media are effective in creating awareness and stimulating interest, but less often lead to specific action (acceptance).

• **Future Action Planned** — As a result of the study, we have substantially changed our activities in line with the specific activities suggested by the study and outlined below:

1. Encourage farmers to have soil tests and help them understand, interpret and apply properly the recommendations based on the results.

2. Present and interpret results from fertilizer use in terms of dollars and cents.

3. Carry on carefully supervised fertilizer demonstration programs designed specifically to fit local conditions. Place major emphasis on publicizing demonstrations and otherwise encouraging farmers to visit them.

4. Take full advantage of the ability of mass media to stimulate interest and direct farmers' attention to the availability of information from other sources.

5. Provide farmers with information on the availability of credit and how to use it wisely.

6. Provide credit agencies with guides as to economic benefits from the proper use of fertilizer.

7. Help farmers make an appraisal of risks associated with weather.

8. Present and explain to farmers profitable alternatives to their present practices which will help them improve financial returns from their farming operations.

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A Symposium

Strengthening Cotton's Quality-Leg

Panel Leader

DR. EARL E. BERKLEY,

Director, Fiber and Spinning Laboratory, Anderson, Clayton & Co., Houston

From the point of view of production, American cotton stands on three legs: (1) mechanized production; (2) efficient handling, including warehousing and transportation and (3) quality.

Cotton's future in this area hinges on low cost per pound—that spells mechanization. The growing pains of mechanization, including ginning, would soon disappear if we could offer the producer a premium for a job well done and make cotton competitive once more. Cotton warehousing in all but the Western States and transportation here in the U.S. have no superiors.

If our cotton is to command a premium in foreign markets and fill the needs of our domestic mills, it must have that characteristic known as "quality."

Demand must be kept in mind when defining cotton quality. Demand changes from one era to another, and quality definitions should change with the times. High quality cottons could be defined as those which will produce the largest number and type of products; i.e. cottons which are least limited in their utilization. Super high quality fabrics can best be made from high quality fiber.

Harvesting and ginning practices at the present time tend to camouflage or disrupt the former association of classer's grade and fiber quality. Hand picked cottons, particularly those ginned on the simple Whitney gin, without precleaning and lint cleaners, although of low grade, may produce the highest quality yarn found in the industry. Rough preparation—which at one time was an indication of bad ginning and, therefore, low quality from the price point of view—is now sought by certain mills that find roughness is associated with old-fashioned gins and adequate moisture content. The rough bales are now considered to be of the highest quality within a given grade. The grade must be borne in mind, however, because it is associated with the percentage of waste in processing.

Changes in growth areas over the last 20 years make it necessary for American farmers to bear these quality factors in mind if they wish to sell their cotton promptly. American cottons are still sold at a premium over other growths, particularly those where careless handling and fraudulent practices are prevalent. If American cotton is to maintain this position, it must yield to mass production with mechanization, be bred for high quality, harvested and ginned for the maintenance of the quality grown, and bale packages must be attractive to the buyer. Only high quality cotton will sell quickly in world competition. The American farmer should, therefore, specialize in the different areas of production on the fiber quality in greatest demand which will produce well for him.

Each farmer should study the factors of environment in his area so as to grow a cotton that will give him a price advantage. Obviously production per acre must be a factor in planning for price per pound. If farmers make a better profit by growing more per acre and selling at lower prices per pound, then we should go along with it. ◆ ◆

Panel Member

What Is Quality?

DR. BURT JOHNSON,

Research Consultant, National Cotton Council, Memphis

Let's develop a definition for quality — a definition for the quality of any raw material including cotton. Our definition will have to include a number of factors, which makes the definition long, complex, and possibly a little difficult to understand in total. Therefore, I've tried to compress the long definition of quality into the single line of an equation. To start we'll represent "quality" of materials by the letter Q placed on the left side of the equation:

$$Q =$$

The first things that help describe quality are the properties of the material. We'll let "P" stand for "properties" of any raw material such as cotton and so on; and we place "P" on the other side of the equation:

$$Q = P$$

But P is rather indefinite. We have to have some way of showing that we're talking about length, chemistry, strength, elongation, weight, and so on of our cotton fiber. So let's make our equation show what is meant by properties by changing it in this manner:

$$Q = \pm P_l \pm P_c \pm P_s \pm P_e \pm P_w \pm \ldots \pm P_x$$

in which P_l, P_c, P_s, P_e, P_w, . . . P_x

represent the properties of length, chemistry, strength, elongation, weight — and other properties, respectively, of cotton or any other specific material. The ± (plus or minus) signs are used because a particular quality (Q) being described will need the several properties (P) in greater or lesser amounts.

The fact that ± (the plus or minus) signs had to be used for the properties (P) of the material demands that another factor be described, namely, the product into which the material is to be manufactured. If "manfactured product" is represented by the symbol "A," and is entered into the equation, the description of quality now looks like this:

$$Q = \frac{(\pm P_l \pm P_c \pm P_s \pm P_e \pm P_w \cdots P_x)}{A}$$

But merely naming a product is not enough. The attributes or properties of the product have to be known, because if they are not, the + (plus) signs, for example, of the raw material might get way out of line, which automatically puts the — (minus) signs out of balance in terms of what is required in the manufactured product (A). Therefore, the manufactured product must be described more fully. This can be done by attaching the same symbols for length, chemistry, strength, and so on, to A, the symbol for a fabric, or other product. When this is done, the equation looks like this:

$$Q = \left(\frac{\pm P_l \pm P_c \pm P_s \pm P_e \pm P_w \cdots \pm P_x}{\pm A_l \pm A_c \pm A_s \pm A_e \pm A_w \cdots \pm A_x} \right)$$

All the properties within the parentheses are taken together — that is, a fiber is not simply some length to which is attached a little elongation and then some strength, and so on.

The properties of the raw material (P's) and the properties of the manufactured product (A's) have cause-effect relations to each other (as shown by the relationship line between them), and therefore affect the final description of quality (Q). Quality is not merely properties of a raw material, nor properties of the manufactured product, but quality is both of these in a definite cause-effect relationship to each other.

The quality of the product can be further affected by the manufacturing process used to make it. Letting "M" represent "any and all manufacturing processes including all possible combinations of costs

of manufacturing," this factor can be entered into the quality equation:

$$Q=\left(\frac{\pm P_1 \pm P_c \pm P_s \pm P_e \pm P_w \cdots \pm P_x}{\pm A_1 \pm A_c \pm A_s \pm A_e \pm A_w \cdots \pm A_x}\right)/M$$

Manufacturing procedures and product quality are related to each other. At the same time, the properties of the raw materials also have a relation to manufacturing methods and costs.

Two more factors influence the description of quality (Q). These are (1) "cost of the raw material" and (2) "use value" which often is loosely translated as "price of the product." Let C and V represent these two added factors, and have them entered forthwith in the quality equation in this manner:

$$Q=\left[\frac{(\pm P_1 \pm P_c \pm P_s \pm P_e \pm P_w \cdots \pm P_x)/C}{(\pm A_1 \pm A_c \pm A_s \pm A_e \pm A_w \cdots \pm A_x)/M}\right]/V$$

Here, again, there are relationships between the cost of the raw material (C) having properties (P) of certain magnitude. This total relationship of the raw materials and their cost [ ] (brackets) is in turn in a cause-effect relationship to the relationship of the product's properties (A and its manufacturing processes and costs (M) in the lower [ ] (brackets). This total complex relationship in turn, has a final relationship to the price or value placed on the use of the product (V) as shown by the usual relationship sign.

That is, Q, or quality, is high when the total of the costs (C) of the correct properties of raw materials (P) and the costs of manufacturing a product (M) having given properties (A) is less than the price of the use value of the product. But if anything adversely happens to one or more of the factors related to V, then the combination of all these factors tends to cost more than the price received for V, showing that Q, or quality, is also tending to be low. Of course, the converse is also true. If anything beneficial happens to any factor in relation to the value of the product (V), then quality (Q) is high.

A major cotton quality evaluation problem centers around the necessity of measuring properties correctly. Accurate measurements of properties are absolutely essential if one is to evaluate quality correctly. For example, assume one's ability to measure fiber length (P_1) is so poor that he calls a 13/16" fiber 1-3/16". Then he would be paying a high price (C) for what he did not receive, the quality of the product (A) would be poor, manufacturing would be chaotic and its costs (M) would soar. The net result would be a low priced article of low use value (V). All this would happen because inaccurate measurement, if considered alone, would give an utterly false value to Q, or quality.

Cotton spinners say that actually this is happening every day. They say that fiber length (P_1), or some other property (P_x), is not being properly measured which results in disturbance of their manufacturing costs and outputs, (M). These relationships may work both ways. Spinners have changed their manufacturing methods, (M) and this may have upset their old concepts of the relation of fiber properties (P) and spinning performance (M).

Good measuring methods, not only for fiber properties (P), are demanded throughout this equation. For example, we have no good, cheap, routine method for measuring wear life of a fabric(A_x). Even if we had perfect fiber property measurements, we cannot achieve the full use of that part of the equation until we have good measurements for wear life, and the other properties of the manufactured product. *All* measurements, including costs (C) and manufacturing methods and costs (M) have to be accurate. If one can't count ends down (M) accurately, the value of correct measurements of fiber and yarn properties is partly lost

All these factors in the quality equation have to be taken into consideration *every time*. They cannot be considered separately when evaluating quality. Considered separately, a single factor is only a property, as in the case of the individual properties of the fiber (P_1, etc.) and of the manufactured product (A_1, etc.). Neither can raw materials costs (C) or manufacturing methods and costs (M) be taken alone as single factors when evaluating quality.

Every factor has to be known, and if it is to be known, then it must be measurable. And it must be measured accurately. If not, then there will be some degree of disaster throughout this equation, and most obviously the concept of the quality of the material (Q) will have to be revised.

Let's apply an illustration about cotton to this equation:

The properties of a manufactured product (A_1, etc.) describe a high quality sewing thread. This means that it will have to be strong, at the same time it will have to be uniform in diameter and smooth so it can pass through the rapidly moving needle, it must not shrink, it must take dye uniformly, and so on and on (A_1, etc.). This means that manufacturing operation (M) must be under good control at all times in order to make the product having the specific use value (V) that good sewing thread has. To this product must be fitted a set of fiber properties (P_1, etc.) which are adapted to thread. The fiber must be strong, it must have high maturity so that there are few neps to make flaws in the thread, and it must be long in order to make the thread strong and smooth. Such cotton is costly because it can be produced economically only in limited areas and the yields do not equal those of shorter cottons. Is this costly, relatively rare cotton a high quality cotton? *No, it is not a high quality cotton, except when it is used efficiently and effectively in specific products* such as thread, balloon cloth, typewriter ribbons, and fine dress goods.

Why would it not be high quality cotton if used in tobacco cloth, for example? Just one reason is enough, although there may be others, the cost (C) is too high for what the use value (V) of tobacco cloth is. Further, because the supplies of such cotton are so limited, any undue consumption would force its cost even higher, thus making this a cotton of even lower quality for tobacco cloth.

With this as a starter, you can multiply your own illustrations of cotton quality, always remembering that all the factors have to be in known relationship to each other *and* to use value to determine the level of quality.

Does this mean that all these factors have to be measured all the time? In practice, they do not. In research, they do. But after research establishes the principles for machinery settings and speeds (M) in relation to fiber (P_1, etc.) and product properties (A_1, etc.) then machines need not be actively considered each time. The relationships between costs of properties (C) and manufacturing (M) can also be established within reasonable constant limits. For certain products, some of the fiber properties (P_1, etc.) can be ignored, but others are always in need of measurement. This is true also for the properties of the manufactured product (A_1, etc.).

In short, one of the main purposes of research in the field of cotton quality is to establish as many constant factors in this equation as possible. Another purpose of cotton quality research is to develop means of accurately and commercially measuring all the non-constant but pertinent properties of the fibers (P_1, etc.), of the products (A_1, etc.) and of use value (V).

One final question. Does insistence that all factors in the equation must be considered in order to find the true quality mean that a *particular set of fiber properties* is needed for *each* particular product made of cotton? That is, are certain fiber properties needed for handkerchiefs, certain for shirts, certain for dresses, certain for right hand socks, and certain for left hand socks? In short, do we need a tailor-made fiber for each separate cotton use?

We do not need that many combinations of fiber properties. We need only a relatively few main combinations — but — and this is most important — *we must always know accurately which fiber property combination (P_1, etc.) we have* so that it can be used in the correct product (A_1, etc.).

This is true because by manufacturing adjustments and techniques (M) many kinds of yarns, from the very coarsest to extremely fine, from very soft twists to very hard twists, can be made from a single general fiber property combination. Immediately, the range of yarn properties (A_1, etc.) available is greatly multiplied — simply by the application of selected spinning techniques (M) to cotton from one of the general cotton property combinations.

The range of the product property combinations (A_1, etc.) becomes fantastic when the different yarns are used in the wide range of weaves and knitting constructions (M) available.

Particular use values (V) are created by correctly relating fiber properties (P_1, etc.) at a certain cost (C) with manufacturing techniques (M) which result in these product properties (A_1, etc.). Quality (Q) is determined by relating accurately measured factors in the quality equation.

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Panel Member

Improving Quality By Breeding

DR. T. R. RICHMOND,

Agronomist, USDA, Texas Experiment Station, College Station, Texas

Since that day long ago when some perceptive primitive found that cotton fibers could be spun into yarn and wover into cloth, lint has been the prime economic product of the cotton plant. It is only natural then that practically everything that has been done to improve cotton has, in one way or another, been directed toward increasing the yield or improving the quality of the lint, or both. Under present economic conditions a farmer can afford to "give away" little, if any, yield in order to produce a product of higher quality. Yield is, therefore, the character that is practically always given top priority in a cotton breeding program. Quality, however, has never been neglected, and it is now abundantly apparent that we must give more attention to it than ever before if

modern spinning and processing requirements are to be met and cotton is to hold or improve its position in the textile markets where it must compete with all sorts of other products, both natural and man-made.

In setting plant breeding objectives involving fiber or spinning properties, the actual performance characteristics and the end-use values are the basic considerations. But, of course, such characteristics and values cannot be measured directly in the primary stages of a breeding program. The usual, and I believe logical, approach is to devise some method or instrument by which they can be estimated or simulated rapidly and economically from large numbers of individually small samples. Progress in this direction has involved close collaboration among plant breeders, fiber technologists and "instrument men"—physicists, machinists, etc. This team approach has resulted in rapid evolution of methods of fiber property evaluation.

Thanks to modern cotton technology we need no longer speak of cotton quality in terms of "character"—hard-bodied, regular, soft, silky, etc.—nor need we rely as heavily as we once did on the art of plant breeding—the "eye" and the "feel." Reliable instruments for measuring such raw fiber properties as length, length variability, strength, elongation, fineness, shape and maturity are now available. The more fiber properties we can indentify and measure with reasonable accuracy, the better will be our chances of attaining new objectives in terms of producing special fiber types for specific end-uses. If we are to deal practically with fiber quality we must learn how to identify, evaluate and manipulate its components—the fiber properties—in the breeding program.

When a cotton breeder undertakes a problem in breeding for new or improved fiber properties he should first be sure of two things: (1) that the property or properties with which he proposes to deal are present in, or can be incorporated into, the parental or primary breeding stocks and (2) that there is sufficient genetic variability present in these materials to insure a reasonable "breeding advance" when proper selection and progeny testing methods are employed.

A significant forward step was taken in 1947 when the organizers of Regional Research Project S-1 undertook as their first objective "to accumulate, maintain and evaluate cotton species, interspecific hybrids, races and genetic types," i.e. to establish a cotton "germplasm bank." Regional collections, maintained primarily at College Station, Texas, and Stoneville, Miss., contain the world's most extensive collection of cottons. They now include the commercial varieties of the United States, all of the old or obsolete varieties that could be located, the races of American Upland cotton collected in the center of origin in Mexico and Central America, the foreign varieties and cultivated species, as well as the wild species of the world and many of the hybrids. This collection places a far wider range of fiber types at the disposal of the present-day breeders than was available to our predecessors a generation ago.

The high state of development and the harmonious adjustment of the economic characters of current commercial varieties was not reached overnight or by accident. If we attempt to improve these varieties by introducing a new character or up-grading an existing one, we run the risk of reducing the effect of one or more of the other characters. This risk is the principal occupational hazard of the plant breeder.

The tensile strength of most of the varieties now grown in this country has been increased by 10,000 to 15,000 pounds per square inch during the past 20 years by selection within or crossing among closely related varieties or strains. Small improvements in other fiber properties have been made by these methods and there is still enough variability left in the closely related Upland stocks for further small-scale improvements.

If we wish to make really large changes in fiber properties and produce types with fiber properties well outside of the range of regular Upland cottons, we are often forced to turn to the more distantly related stocks, the primitive races and the species. Fertile crosses between Gossypium hirsutum and G. barbadense have long been possible, but it was only after the colchicine technique was developed that the Asiatic cultivated and the wild species could be brought into fertile combination with Upland types. This important discovery opened up a vast new source of fiber properties. However, the troubles we have in holding up yield and other agronomic characters while attempting to improve the fiber properties in crosses among closely related stocks are compounded in the interspecific crosses. Some of the fiber properties in the early generations of these crosses were simply "out of this world," but in yield and other agronomic characters they were a sorry lot indeed.

Starting with these miserable plants we have been able to develop several experimental strains or primary breeding stocks which are beginning to approach current Upland varieties in yield and which have retained to a considerable degree their unique fiber properties. This has been accomplished by three or four back crosses to Upland followed by a series of intercrosses among extracted strains. These stocks carry fiber properties, or combinations of fiber properties, which are not encountered in ordinary, commercial Upland cottons. Since they are new, there is no background of manufacturing, processing and use experience on which to judge their probable worth. Several of the lines produced enough lint in 1957 for a laboratory-type spinning test.

These specialized strains are not up to commercial standards in all respects. We expect to increase several of them to one-to-five bale quantities in the hope that pilot-plant or mill-scale spinning and processing tests can be arranged. Such tests should help us decide which of the strains are worthy of further breeding work. It is of special interest to note that all of the strains gave higher yarn breaking strength values than is expected from average commercial cottons of corresponding staple lengths.

We are all agreed that we should try to produce cottons that will spin and process more rapidly and efficiently and provide the kinds of finished products that the consumer is willing and eager to buy. We may even agree that, versatile as cotton fibers are, no one fiber type can serve the entire range of end-use requirements. In this connection our competitors in the man-made fiber industry single out a certain specialized segment of the textile market and then proceed to produce a specialized product to serve this particular segment, using quality control to insure consistent performance. Can we cotton people play this game? What are the main end-use categories and what are the specifications of the cottons that ought to go into them?

Many breeders—perhaps the majority—feel that until more specific, long-term objectives can be written they would do better to spend more of their time on other things and simply try to hold what fiber quality they have, or at best upgrade certain fiber properties slightly. Arbitrarily or otherwise an occasional individual has decided to "shoot the moon" and breed a variety to meet a new set of fiber specifications. A few of us have decided to develop a series of primary breeding stocks in which the fiber properties have been molded into unusual combinations. The idea here is to have an up-graded source of breeding material available if a need for a special kind of quality should arise. These stocks also will supply new material on which to conduct special spinning, processing, serviceability and consumer preference studies.

Perhaps these trial-and-error methods

1958 Cotton Disease Loss 1,957,778 Bales

NEARLY TWO MILLION BALES of cotton were lost to disease in 1958, the Cotton Disease Council estimates on the basis of 51 individual reports from state observers.

The 1,957,778 bales lost to disease represent 14.27 percent of the crop. In addition, of course, many thousands of tons of cottonseed were lost.

By states, the toll of diseases was: California, 196,671 bales; Arizona, 97,779; New Mexico, 32,089; Texas, 927,657; Oklahoma, 37,483; Missouri, 95,126; Arkansas, 163,054; Louisiana, 32,051; Mississippi, 155,270; Alabama, 65,463; Georgia, 48,079; South Carolina, 29,797; North Carolina, 23,224; and Tennessee, 53,689.

By diseases, estimated bales lost were: Fusarium wilt, 101,821; verticillium wilt, 331,384; bacterial blight, 468,026; root rot, 198,718; anthracnose boll rot, 24,502; seedling disease, 343,859; ascochyta blight, 10,281; boll rots, 322,240; root knot, 136,346; and other diseases are estimated to have reduced the cotton crop by 20,601 bales in 1958.

are the best we can ever hope for in breeding for improved fiber quality, but I can't help but believe that progress would be faster and much more econocical if end-product objectives could be states more clearly. Let me offer for your criticism a cotton research program composed of the following major steps:

1. Develop a practical classification of end- or consumer-use products.

2. Without considerations of price, determine the raw-fiber specifications of the cottons that ought to be used in each category.

3. Then, considering price, determine the practical limits within which one fiber property may be substituted for another.

No charge is made to our friends in economics, marketing and utilization for outlining this program—in fact we know perfectly well that a wealth of valuable information already has been developed in these areas—and important studies are in progress. So all we are really asking for is more coordination and definition in the available information and additional research here and there to close the "gaps."

Just as cotton breeders can not claim all the credit for what has recently been done to improve cotton fiber quality, we can not be given all of the responsibility for future improvements. Inherent fiber properties can be enhanced or damaged most anywhere along the line from producer to processor. If all of us in every segment of the industry will work hard to gain a better understanding of what is needed in terms of cotton quality and work even harder to provide the cottons to meet these needs, cotton will not only hold its favorable position in the world's textile markets but will regain lost outlets and develop new ones.

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Panel Member

Improving Quality in Growing, Harvesting-Ginning

GEORGE J. HARRISON,

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Much has been said by various segments of the cotton industry about the ill effects of modern picking, ginning and lint cleaning, but too little emphasis has been placed upon the field conditions which have made all this equipment necessary.

• **Effects of High Nitrogen** — As is well understood by cotton growers, the primary function of nitrogen is to grow more vegetation, larger bolls, etc. Up to a point nitrogen can be profitably added without adversely affecting fiber quality.

Exclusively high rates of nitrogen accompanied and ample soil moisture, often result in rapid plant growth and excessive shedding of fruit forms, either as minute squares or as young bolls or both. When this condition continues for a considerable length of time, rank growth with the attendant dense canopy of shade is sure to follow. Under these circumstances, the fiber of any and all bolls is likely to be large in diameter, irregular in circumference, and poor in structural alignment.

Due to the declining hours of sunlight and waning temperatures as the season advances, fiber development in late summer bolls is seldom as complete as is fiber in early season bolls on the same plant. Since this is so, it behooves the grower to make every reasonable effort to produce as much cotton as early in the season as climatic factors will permit. A judicious use of nitrogen, combined with timely insect control, will often result in maximum yield in a minimum length of time.

• **Effects of Irrigation** — The water requirement of the cotton plant is quite moderate, but it does need it in continuous supply during the development and fruiting period. A shortage of water during the period of fiber elongation and cellulose deposition will surely result in reduced staple length and unnatural fineness, but the tensile strength, as measured by the Pressley and similar methods, is likely to be abnormally high. It has become almost axiomatic that cotton which has been classed as "grassy" has the highest tensile strength along with other desirable fiber properties. A plausible explanation of this appears to be that in the first place grasses assist in the use of excesses of nitrogen and water, thus giving the fiber full opportunity for development.

Perhaps the last summer irrigation is the most important one of all. In a large measure, it will determine the harvest date of a high percentage of the total yield, and thus may influence the grade significantly. A well-timed last irrigation not only permits earlier harvest but it greatly influences defoliability, and consequently the amount of cleaning and drying that will be required to give satisfactory grades. In regions where cotton growing is totally dependent on irrigation and where rainfall during the harvest is rare or negligible, the date of the last summer irrigation largely determines the prevalence of boll-rots, which within themselves can have a tremendous effect upon tensile strength, length, length uniformity, as well as upon grade and color. Wherever cotton is grown, drainage of excess water from the field is highly desirable.

• **Effects of Aeration** — The effect of boll-rots on fiber breakage and length uniformity is less well understood, but there is being accumulated considerable evidence that much of the fiber damage that is commonly attributed to over-drying and excess cleaning would never occur were it not for the presence of diseased cotton.

It has long been understood that boll-rots are most prevalent in wet seasons, or periods of prolonged high relative humidity during the time cotton bolls are opening, the fiber being attacked and often destroyed by various fungi before there is opportunity to dry and fluff. This has led to a condition often referred to as "tight-lock." In a systematic survey of cultural practices leading to tight-lock or boll-rots in cotton, it has been found highly correlated with aeration and light penetration.

• **Harvesting for Maintenance of Quality** —If the crop is to be defoliated, probably 75 percent of the total yield should be open before the defoliant is applied. Above all, the fiber in the last unopen bolls should be fully developed. Picking should follow as soon after defoliation as the dropping of leaves is complete. Cotton tends to turn gray rather rapidly from exposure to sunlight after the leaves have fallen. Rainfall, even in small amounts, after defoliation, has a very prompt and pronounced effect on the color of the lint.

Unless cotton is to be ginned within 30 hours, it should not be picked when seed cotton moisture is in excess of approximately eight percent. The source of moisture has not seemed important; it can be atmospheric moisture or from picking machine spindles.

It is difficult to find circumstances under which hand picking is economical for the cotton grower. Moreover, many experienced cotton classers find it difficult or impossible to distinguish between hand picked and well handled machine picked cotton.

Since this is so, one wonders why we still have other than the best of machine picking. In this regard, we have come a very long way in quality picking in the last decade or so. However, there is still much to be gained in teaching farmers how to grow their crop for machine harvesting; when a field is ready for harvest; and the importance of their machinery. If cotton is well grown, of fairly uniform height, standing erect and evenly matured, harvesting for highest quality will not be a serious problem so long as equipment is maintained and operated with precision and the cardinal rules of moisture content are observed.

• **Ginning for Maintenance of Quality** — Much has been written and still more has been said, off the record, about the effects of ginning on cotton fiber quality. Before the days of overhead cleaners, bur extractors, etc., we were told that the gins were responsible for considerable damage to the lint. With the advent of dryers, these installations were soon given credit for ⅛-inch reduction in staple length if operated in excess of 180 degrees F. "Over-drying" still gets much of the credit for about anything that goes wrong with a lot of cotton anywhere in the processing. So far as your speaker can ascertain, no one has determined accurately at what point heat (drying) becomes harmful, or at what percentage of seed cotton moisture, drying becomes desirable.

Most recently, we are told that five to six percent of moisture in the lint after ginning is desirable from a mill standpoint. This certainly would be advantageous to the ginner as it would help him with his gin turn-out; the cotton classer would like it because the cotton would staple easier and better; and the grower, above all, should like it because it would add weight to his bale.

Somewhere along the line, the ginner has a customer to satisfy. In nearly all cases this is a farmer, who wants the highest grade regardless of the character of the raw material furnished.

The modern ginner is well equipped to perform almost any service the grower wants, but still cannot perform miracles. In addition to the batteries of dryers, cleaners and lint cleaner, he is equipped to determine seed cotton moisture, lint moisture and has a psychrometer for accurate knowledge of relative humidity. Some go so far as to identify cotton trailers on arrival as to whether it was forenoon or afternoon picking. This allows for the adjustment of all equipment in accordance with the moisture

content and the relative humidity at the hour of ginning.

Until there is more specific information available, we have to consider that every manipulation of cotton, whether by heat or impact, is capable of adversely affecting quality. Between the wagon and the gin bale press, there are eight to 10 manipulations of the cotton for one purpose or another. Presumably each of these can serve a useful purpose if the condition of the cotton requires it. Since many of these steps can be by-passed when desired, it seems a safe assumption that the manufacturer did not expect that all steps would be necessary on all cotton. It, therefore, seems incredible that dry cotton should go through a dryer, or that clean cotton should go through a cleaner. If cotton is to reach the mills in the best possible condition, in the light of the condition of the seed cotton on arrival at the gin, any operation that can be by-passed without financial sacrifice to the grower, should automatically be taken by the ginner.

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Panel Member

Quality Pay-Off In the Market

CARL COX,

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It becomes quite apparent that the cotton industry as a whole is developing a new concept of its responsibilities in plant breeding, production, chemical application, harvesting, ginning, warehousing, merchandising and spinning. Our industry, having already entered this cycle of scientific and technological advancement, is now creating new quality control departments, or at least setting up new approaches by establishing quality control practices.

At the present time the most vital contribution that could be made to strengthen the industry as a whole would be to solve some of the main problems in cotton pricing and pricing policies. These present problems are largely the results of the U.S. cotton classing policy and are as follows:

1. By establishing a guaranteed high price we have priced cotton out of the reach of the free market and put it in the hands of the government CCC loan program.

2. It has caused quality production of cotton for this loan price rather than for the qualities being demanded by the mill market.

3. It has failed to recognize the new advances in laboratory testing of the physical qualities of cotton and thus in many instances has become a dumping ground for cottons of low spinning value.

4. By offering this guaranteed high price it has given the incentive to foreign cotton producers to take away our foreign markets. In this respect it is these lost markets to natural fibers that we will find most difficult to rectify in our future long range cotton policies.

• **Needed Changes** — In order to make any real progress for a more effective cotton merchandising system, it is essential that our pricing system take into account these created values along with the additional costs now facing the whole of the cotton industry. It is because of these modern technological advances both in scientific testing, mechanical harvesting, improved ginning practices, as well as that of the high speed mill operations, that we find our present standards for pricing cotton have been too rigid and several years behind the trend of times. To accomplish these objectives we must:

1. Change the procedure in describing raw cotton and measuring its properties.

2. We must establish a broader price quotation that will be established on a world-basis that is related to current supply and demand factors and not on 10-year averages.

3. A system must be worked out by simplified mathematical procedure to most effectively select combinations and bales by qualities that best fit the mills needs in their finished products.

4. A new approach must be made in the pricing system that gives both premiums and discounts for laboratory tests, such as fineness and Pressley strength.

5. Laboratory types and standards must be set up with rules and procedures for standardization and arbitration.

6. A departure in our present pricing policy must be made in order to change from the supply or production side of the picture to that of the demand side. This is the cotton farmer's only hope in retaining a "market" for cotton, which is the factor that creates its value.

We must be realistic in that the longer cottons should not carry as heavy a discount as the low fineness readings. On our "spotted" and "tinged" grades length becomes less important, since in most cases cottons longer than 1-1/16 inch have no additional value in the lower grades. In these spotted and tinged grades we carry large discounts because of this color and we find mills fully aware that the lower fineness readings are expected in these particular ranges of grades.

We are entering onto a phase of pricing that many will disagree with and say that we are not ready to enter this phase as far as marketing cotton is concerned. They give as their reasons, which are justified, the fact that this particular test is too slow for volume trading and also quite expensive. However, it should be pointed out that we are already in this stage of marketing cotton and we must find ways to do the Pressley test faster and cheaper. In many cases the mill does not specifically say that it wants a hundred percent test on Pressley strength but goes about getting the same objective by changing from one particular growth area to another because of its superior strength. In practically every case this means that the mill is actually paying a premimum for these cottons that do carry a high Pressley strength.

• **Cotton Merchandising** — The major payoff for the cotton merchant in cotton merchandising comes from a merchant's ability to take market types, such as those identified as "American" "Mexican" "Egyptian" etc. and perform the following steps that fall under the heading of a quality control section.

First, a merchant must take each of these specific market types and think in terms of both buying and pricing this particular cotton on the basis of varities and growth areas.

Second, the merchant must know the amount and location of these varieties planted so as to have an indication of the qualities and quantities to be produced in order to make forward sales. The weather and general environmental conditions must be known all the way from the preplanning ground moisture through to harvesting.

Third, he must evaluate the cotton by making accurate measurements of strength, fineness, length, grade and reflectance by highly skilled technicians and classers. He must be in a position to know at all times the supply factor and price of all of these cottons being asked for by the mills and at the same time know the exact status of his stock on hand or his ability to find the cotton that the mill desires. Along with all of these complicated marketing problems, a department just be available to ship and inventory this cotton on the exact promised dates of shipments.

It has only been recently that the cotton industry realizes that we are now rediscovering and re-evaluating cotton. These services that are being performed by the whole of the cotton industry are pointing to the fact that the quality of the cotton lies not only within each individual bale but also in how these bales are grouped in even running lots that best fit the specifications for the end product. Our quality control program most certainly begins with the cottonseed breeder and it was this motivated source of laboratory testing for better seed varieties that led the way for the rest of the cotton industry.

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Joint Paper *Part I*

Getting Cotton Off To a Good Start

DR. JOHN T. PRESLEY,

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Unfortunately, there isn't any magic formula for getting cotton off to a good start every year. There are, however, several things which will help, such as: good seedbed preparation, adequate moisture, proper fertilization, good quality planting seed that have been tested to prevent seed borne infections, and planting when temperatures are favorable for seedling development. In my opinion the planting seed is the most important item among those just mentioned. If the seed does not germinate and grow, the other phases of the pre-

planting operations have been pretty much wasted effort.

A farmer of course must use the seed that is available to him and he actually knows very little about the seed except what he reads on the tag. The germination percentage is given but that information is based upon laboratory germination under the most favorable condition possible. There is no information given concerning the germination behavior of the seed at unfavorable temperatures which frequently occur following planting. The farmer needs and deserves this information as a basis for planning his planting program.

In spite of the fact that germination is one of the basic processes in the development of many crop plants, our knowledge of the process is very incomplete. Farmers have learned the practical aspects of germination largely through trial and error but the basic mechanism of the process is still not known to plant scientists. Laboratory studies during the past two years have given some information on the effects of certain treatments and conditions on the germination behavior of cottonseed. These intensified efforts of pathologists and physiologists to explain the influence of environment, before and after planting, on seedling reaction are beginning to bear fruit.

A laboratory method of deteriorating cottonseed has been worked out which permits us to study the performance of different portions of the same seed lot that have been deteriorated to different degrees. In these studies we find that undeteriorated seed will give good germination over a wide range of conditions but as deterioration progresses, there is reduced germination at the lower temperatures. For instance, seed that will germinate above 90 percent at 86° F. may germinate less than 40 percent at 60° F. This latter temperature would not be considered particularly unfavorable for planting good quality seed but with poor quality seed the grower should wait until temperatures are higher before planting. In my opinion a modified "cold test" for cottonseed similar to the one used for corn would be practical and very helpful to growers. Through our cottonseed research we are finding out what response to expect from seed of different qualitites and also a few things which improve the chances of "getting off to a good start."

• **The Cold Test** — The rules for testing seeds aim to provide optimum conditions for the germination of each kind to be tested. It has been advocated that in addition to the standard germination test another test should be made under adverse growing conditions similar to the unfavorable conditions which may prevail in the field subsequent to planting. This method, commonly known as the "cold test," is intended to detect weaknesses and measure the seeds' response to those unfavorable field conditions. At the present time the "cold test" is limited essentially to corn, although it is understood that the method is being used for beans and peas on a small scale. Briefly, the method for corn consists in planting the seed in unsterilized soil or a mixture of soil and sand, with high-moisture content, at a temperature of approximately 10° C. for five to seven days and then transferring the tests to a temperature of approximately 30° C. for completion.

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Part II

Calcium Beneficial To Seedlings

DR. ALFRED B. WILES,

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For many years plant pathologists who have worked with the seedling disease complex in cotton have apparently been content with the explanation that the primary factors involved in this problem were fungi and adverse weather conditions. While these factors most certainly are important, it appears that there are at least two others which must also be considered. These are the past history of the planting seed and the role of calcium in early seedling nutrition. We will deal here with the second topic.

The necessity of calcium for proper growth and development of seedlings was noted for several crops other than cotton at a rather early date. It is somewhat surprising that cotton was not included in these crops because seedling diseases in cotton have been a problem for many years.

When there is an insufficient amount of calcium present, cotton seedlings develop an array of symptoms which closely resemble those produced by soil fungi. On the primary radicles there may be a moderate browning or a complete breakdown. In some cases new lateral roots are produced on the upper portion of the radicle above the damaged area, and if such seedlings survive they have a root system which is without a tap root. A like symptom also occurs in seedlings which develop from partially deteriorated seed. In this case the primary radicle is killed or seriously damaged in the deterioration process. Either of these conditions may lead to what has been termed "nub-root" in older cotton plants. Further symptoms of calcium deficiency include collapse of a large portion of the hypocotyl, yellowing and necrosis of the cotyledonary leaves, and killing of the terminal growing point.

The precise environmental conditions that are most conducive to the expression of calcium deficiency symptoms in cotton have not as yet been determined. Under greenhouse conditions it appears that the most severe symptoms are obtained under daytime conditions of high light intensity and high temperature, coupled with moderately cool night time temperatures.

It is not difficult to visualize a situation where a calcium deficiency might exist. It could happen in the upper several inches of a light, sandy soil, particularly after a heavy rain. It is here that the seed are placed and the developing seedlings remain for four or five days. Such a condition might possibly bring about the described effects.

It is not believed, however, that the prevention of this expression of deficiency symptoms is really the most important aspect of this problem. Because calcium has been found to be so beneficial to weak seedlings developed from partially deteriorated seeds, and to initially strong seedlings weakened by adverse growing conditions, this appears to be the most promising aspect of supplying calcium in sufficient quantity to cotton seedlings.

Calcium is essential to the process of cell wall formation. Stems of seedlings which have received ample calcium are hard and tough to the touch while those receiving no, or little, calcium are soft and tender. In these experiments the source of calcium was gypsum or calcium sulphate.

In order to be most effective, the calcium compound should be placed as near the seed as possible. Calcium sulphate appears to be an excellent compound for this purpose. Since many of the chemicals which are being marketed as soil fungicides for cotton seedling disease control have a high percentage of calcium compounds as diluents, it does not seem unreasonable that perhaps at least a part of the benefits obtained from such treatment may be due to calcium.

Thus it appears that the benefits of calcium to cotton seedlings are multiple —it exerts an ameliorating effect on weak seedlings developed from deteriorated or partially deteriorated seeds; it benefits initially strong seeds suffering from adverse growing conditions; it aids in developing stronger, tougher plants; and it prevents a breakdown of the primary radicle, the hypocotyl, the terminal growing point.

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Removing Gossypol From Cottonseed

DR. CARL M. LYMAN,

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Gossypol in cottonseed and cottonseed products has been investigated for many years and from quite a variety of different points of view. Consider in what way this yellow colored chemical compound significantly affects the cottonseed industry.

First, we know that gossypol affects the utilization of cottonseed meal in rations for poultry and swine. Information is now available which provides the basis for the manufacture of meals which are excellent for these uses, but special attention must be given to the control of manufacturing variables. A good meal must be processed in such a way as to reduce the free gossypol content to low levels in order to avoid the unfavorable physiological effects of this compound.

A good meal must have high quality protein, but protein quality in cottonseed meals as they are manufactured today varies over a wide range. It is now known that gossypol is a major factor in determining protein quality. If the reduction of free gossypol is accomplished by causing the gossypol to react with the protein during the moist heat treatment, the quality of the protein is significantly reduced. Alternatives are to remove gossypol from the meal completely or to cause it to react with some other substance besides the protein. This may be an additive. Both methods have been used successfully on a commercial scale.

Perhaps the effects of gossypol on cottonseed oil are of more significance to

the industry than the effects on the meal. During processing some of the gossypol goes into the crude oil, the amount depending on the process used.

Pure gossypol is not difficult to remove from cottonseed oil by the refining methods in general use. However, gossypol is a rather unstable chemical compound and tends to decompose while standing in oil. Once it has broken down into fragments and perhaps these fragments have polymerized, then there is always a residual amount of colored material which is difficult and costly to remove in the final bleaching process.

Gossypol not only adds cost to the refining of cottonseed oil but it limits the possibilities for utilization of the free fatty acids which are removed as a by-product (soap stock) during refining.

There was a time when all available products of this kind were needed for the manufacture of soap. Because of the increased use of synthetic detergents this is no longer true. Substantial amounts of free fatty acids from vegetable oil refining are purified for industrial uses by distillation. During alkali refining of cottonseed oil the gossypol which is removed along with the free fatty acids is converted into a tarry mass and this tarry mass makes the recovery of free fatty acids by distillation an impractical procedure.

Considerable amounts of unrefined free acids from vegetable oil processing are now used in mixed feeds. This use is based in part on the high caloric value of fatty acids which makes them excellent sources of energy. In the case of cottonseed, the product would be in even greater demand than it is today if it were not for the presence of the tarry residue of gossypol decomposition products. There is no difficulty here when the product is used in small amounts. When used at rather high levels some depression of growth rate may result.

• **Removing Gossypol by Processing** — Manufacturing conditions have been developed for the production of meals which are suitable for use in feeds for poultry and swine. Such meals are made to certain definite specifications. Free gossypol must be low and protein quality high. In the hydraulic press, the moist heat treatment reduces free gossypol by combining it with the protein. The result is reduction in protein quality. For this reason the hydraulic press method is not a generally satisfactory way of preparing high quality meals for poultry and swine.

In the prepress solvent method considerable quantities of gossypol go into the oil to be removed later by refining. This leaves less gossypol to be inactivated by combination with protein. By suitable processing controls in the prepress solvent system, superior quality meals can be and are made for the mixed feed trade.

Another successful commercial method for the production of degossypolized meal employs the addition of an aromatic amine to the meal after the oil has been removed. The amine combines with the gossypol leaving the protein free. Low levels of free gossypol can be obtained readily.

A new commercial procedure involving the use of an aliphatic amine is soon to be released by the Cottonseed Products Laboratory at A&M College of Texas.

These developments represent real progress but under the best of conditions the removal of gossypol by processing involves additional cost.

• **Removing Gossypol by Breeding** — Since gossypol always seems to be detrimental to the effective utilization of cottonseed products, the question naturally arises. Would it be possible to breed a good producing cotton plant which did not contain gossypol? The first important consideration here is that cotton is grown for the lint, and we certainly cannot afford to do anything which would reduce even slightly, the quality or the yield of the lint. Cottonseed is the byproduct and always will be. Recognition of this important factor makes it clear that the problem would be a difficult one at best.

In spite of this complication, perhaps the problem would have been undertaken years ago had it not been for the lack of gossypol-free genetic stock.

The existence of gossypol-free cotton plants now has answered several questions. We now know that gossypol is not essential to the metabolism of the plant. The plant can grow very well without it. We also know that gossypol is not essential for the formation of either the oil or the protein. What we do not know yet is whether some of the important agronomic characterists such as lint quality and yield or disease resistance are inseparably linked with the character of no-gossypol. The opinion of plant breeders with regard to the possibilities and probabilities is by no means unanimous today. Some are of the opinion that gossypol content is rather simply inherited. Others are less optimistic. Certainly the gossypol-free strain recently discovered is a long way from having the characteristics of a good producing cotton plant.

Two general approaches to the problem are being used. The first it to obtain a good producing cotton plant which is completely free of gossypol. The second approach is not to go all the way but rather to substantially reduce the level of gossypol in important strains by selection and cross breeding. The first objective is perhaps the most desirable ultimate goal but the second could undoubtedly be accomplished much sooner and would still be very worth while.

Many people are asking, how long will it take to get gossypol-free cottonseed coming to the mills? Undoubtedly, it will take quite a number of years even with the best of luck. The problem is difficult but the stakes are high. The possible economic benefits to the producers and the processors as well are worth a concentrated effort to attain the goal.

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New Insect Control Recommendations

DR. M. E. MERKL,

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During the last few years some highly significant changes have been made in the insect recommendations on cotton. Many new insecticides have been developed during the past 10 to 12 years and quite a few of these are now recommended for the control of various cotton pests. Up to two years ago the majority of these new insecticides belonged to the group of chlorinated hydrocarbons —in fact, all of the new ones recommend for boll weevil and bollworm control belonged to that group. The resistance of some of the important cotton pests to certain of these new insecticides has resulted in changes in control recommendations in some areas during the past two years. Some changes are again indicated for 1959.

• **Boll Weevil Resistance** — The status of boll weevil resistance is dynamic and changing; this condition is affecting some state recommendations. Variations in the resistance pattern are indicated from state to state. In North Carolina the level of resistance has changed very little, being confined to localized areas in Scotland County since 1957. South Carolina reports that weevils from its most highly resistant area in 1957 were no harder to kill than the weevils from an adjoining county in laboratory tests during 1958. Entomologists from the area report this change was probably due to a mass dilution of the resistant populations by outside weevils. Coupled with this was an intensive insecticidal program in the resistant area with phosphate insecticides aimed at the overwintering weevils which undoubtedly eliminated a large percentage of the resistant population and made the dilution more effective.

Georgia, Alabama, Missouri, and Tennessee reported no known boll weevil resistance in those states. Mississippi reports that resistance to chlorinated hydrocarbons is increasing in all areas and there is no reason to doubt that this trend will continue. Louisiana reports that weevils resistant to chlorinated hydrocarbons have spread to the southern part of the state. Much of this area was not previously affected by resistance. Arkansas reports resistant weevils widespread in Southeast and Southwest Arkansas as well as the upper Arkansas River Valley. Some scattered fields in Northeast Arkansas were found to be infested with weevils resistant to chlorinated hydrocarbons. New areas of resistance were reported in practically all the counties included in the Arkansas River Valley area plus three counties in the White River Valley area, Jackson, Independence and White Counties. Resistance appeared in Jefferson County and in several new counties in the southwest area of Arkansas.

Entomologists report difficulty in controlling weevils with the chorinated hydrocarbons for the first time in the Waco area of Texas. Laboratory tests on weevils from some fields in this area indicated increased tolerance to toxaphene and a high degree of resistance to dieldrin. In other fields satisfactory control was maintained with the chorinated hydrocarbons. Oklahoma entomologist reports changes in recommendations for 1959 to accomodate the appearance of boll weevil resistance to dieldrin in southeastern Oklahoma.

Resistance among insects other than the boll weevil was reported from several states. Aphids resistant to BHC were reported from one field in Tennessee. Louisiana reports the bollworm more difficult to control this season than in any recent year. State College, Miss., reports resistance in the bollworm is probable since they seem more difficult to kill. Further research is needed on this point. Other states report control of bollworm was obtained when

recommended dosages were used on effective schedules.

Standard materials did not control fleahoppers in the Waco area, necessitating the use of phosphates alone or in combination for control of this pest.

Some difficulty was reported in controlling mites in several states but no significant resistance was reported except in Arizona where Tetranychus cinnabarinus has proven to be resistant to all organic phosphates.

One new insecticide, Sevin, which has shown up well in field trials during the past two years, has been registered for use on cotton and will be recommended for the control of the boll weevil and several other cotton pests next year. Although the 2:1 toxaphene DDT mixture has previously been recommended for a combination of boll weevil-bollworm control, it will be recommended for straight boll weevil control next year.

• **New Procedures** — Changes in the recommendations for boll weevil control have come about largely as a result of the resistant problem. It is doubtful if dangerous organic phosphates such as Guthion and Methyl parathion would have been recommended for boll weevil control where the potential is millions of pounds annually if it had not been for resistance to the chorinated hydrocarbons. In this connection, it is a tribute to the industry, to the commercial applicators, and to the growers that these insecticides have been widely used with so few accidents. It shows that hazardous materials can be used safely when common sense precautions are taken.

The list of individual insecticides recommended for boll weevil control has now grown to 11, with the toxaphene-DDT combination making the 12th. These are Aldrin, BHC, calcium arsenate, dieldrin, endrin, Guthion, heptachlor, Malathion, methyl parathion, Sevin, toxaphene, and the toxaphene-DDT combination. All 12 of these are recommended for control of non-resistant boll weevils. Where resistance is a factor, only six are recommended, these being calcium arsenate, Guthion, Malathion, methyl parathion, Sevin, and the 2:1 toxaphene-DDT combination.

Mixtures of phosphates and chlorinated hydrocarbons were tested across the Cotton Belt. None of these mixtures will be generally recommended except those which have been accepted in the past, such as malathion, methyl parathion, and Guthion plus DDT. The general trend appears to be toward specific insecticides for specific insects rather than toward "one shot" mixtures for all insects. This trend, however, is reversed in several states under certain farming conditions.

Alabama is tentatively planning to recommend the use of toxaphene, endrin or Guthion at seven- to eight-day intervals for control of boll weevils until migration begins. If this interval is used, double the normal amount of toxicant per acre application will be required. Most of the other states do not plan to change their dosage or interval which has been recommended in the past. New emphasis is indicated on nozzle arrangement, gallonages per acre and coverage especially with sprays. Texas' recommendation of 20-inch spacing on a straight boom has resulted in other states considering possible changes in the three nozzles per row arrangement which has been considered standard for some time.

Several new miticides were added to the general recommendations for 1959. Trithion at 0.5 to 1.0 pound per acre and Ethion at 0.3 to 0.5 pound per acre will be recommended for control of spider mites in several states during 1959. Delnav at 0.25 to 1.0 pound per acre gave erratic control of mites in some states but will be recommended in at least two states for control of certain species of mites. Some of the standard miticides failed to give satisfactory control of some species of mites in several states. Recommendations will be altered in these states as the need is indicated.

Dilan 0.87 pound and Dylox 1.5 pound per acre will be recommended in Arizona for control of cotton leaf perforator, lygus and salt-marsh caterpillars during 1959.

• **In Summary** — Recommendations generally will remain about the same as in previous years. Sevin appears to be the only major new addition to the list of commonly used insecticides. Ethion, Trithion, and Delnav are being generally recommended for spider mite control for the first time. Other new materials show promise as new insecticides but need further testing before being placed on the recommended list.

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Controlling Insects – New Approaches

DR. T. B. DAVICH,

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Insecticidal chemicals that are absorbed and translocated in plants have been described as systemic. On cotton, most of the research effort using systemics has been aimed at seed treatment. As a result of this effort Thimet and Di-Syston are being used. Both materials are effective in the control of various early season insect pests. Neither material will control the boll weevil for 10 weeks, the time which cotton entomologists estimate is necessary for a plant grown from treated seed to remain toxic to overwintered boll weevils in order to give effective control. Thimet is not translocated to squares in sufficient quantity to kill weevil larvae, although squares have been shown to be toxic to the cotton aphid following drench applications to roots of squaring plants.

Laboratory tests indicate that 1.0 p.p.m. of Thimet in the diet will inhibit completely larval development. An intensified research effort is in progress with the ultimate goal of finding ways and means of getting 1.0 p.p.m. of an oganic phosphate insecticide into the square. Some of the problems associated with this end goal are: availability of the chemical to the plant, absorption, translocation, retranslocation, metabolic breakdown, effectiveness of metabolites and systemic extenders.

The host plant resistance approach to boll weevil control is relatively new. The single exception to this was the breeding of early maturing varieties. This made use of the principle of host evasion. Other than this, a number of factors associated with resistance were studied, but not followed through in a breeding program. Some of these factors were: boll wall thickness, toughness of the carpel lining, cotton leaf color preference, and hairy stems and leaves. One antibiosis factor studied was—the ability of plant cells to proliferate and crush the boll weevil egg or developing larva.

Breeding programs now are in progress at a few locations. Plant color, hairiness and pigment glands are characteristics being evaluated with respect to the non-preference factor. A number of stations are searching for other characteristics which might provide leads for the plant breeding approach to weevil control.

• **Chemical Resistance** — Chemically- induced plant resistance is a new concept of insect control. Basically it is an extension of the systemic principle. There are two main premises inherent in this new approach. The first of these is—a compound or mixture of compounds can be absorbed by the plant and be effective at the desired site of action. The second premise is—such compounds would have an adverse effect on the biology of the insect. Absorption of such compounds may occur through the seed or root system of the plant. Absorption by these pathways means that the compounds would have to be translocated to the desired site of action. Direct application to foliage would involve more localized absorption and translocation of such compounds.

Adverse biological effects may take one or more of the following forms: egg hatch may be inhibited; larvae may fail to complete their development because of a nutrient withdrawl effect, or fail to molt because of a hormonal effect; pupal development may be prevented; adult emergence may be prolonged excessively. Another possible adverse effect is one of repeliency. The plant may become unacceptable as a food source.

• **New Approches** — The newest approach to insect control is the use of male insects made sterile by gamma irradiation. The sterile males mate with normal females, thereby causing them to lay infertile eggs and thus gradually deplete the population.

Preliminary data on irradiation effects indicate that a radiation dose of 10,000 roentgens will result only in a transient sterility in male boll weevils. In a single test infertile eggs were laid for two and one-half weeks. After this initial period of transient sterility, 13 percent of the eggs hatched normally.

Against females, 7,500 roentgens resulted in only a slight depression of the fertile to infertile egg ratio. Mating behavior and longevity appeared normal in young irradiated weevils. In older weevils the mortality was high at 5,000, 10,000 and 15,000 roentgens.

The attractancy-repellency approach, successful with certain insects, has not been investigated sufficiently with the boll weevil. A few naturally occurring materials and chemical compounds have been found to possess a moderate degree of attractiveness under laboratory conditions. Field tests with these materials resulted in failure. All efforts to develop a technique that would give a reliable and reproducible response to candidate attractants or repellents have resulted in failure. A project has been initiated recently with the object of identifying the supposed attractant in the cotton plant.

Destruction of infested squares as a

control method was investigated a number of years ago. Theoretically, this approach has excellent possibilities. Larvae and pupae present in squares hanging from the plant are subject to a much higher degree of parasitism than those in fallen squares. The vast majority of weevil infested squares drop from the plant. Population build-ups result primarily from adult emergence from fallen squares. If a way could be found to destroy a large percentage of the early fallen squares, or to kill the weevils developing in them, a damaging infestation would not occur, theoretically, until well past the time ordinarily needed for chemical control measures.

Hormones and antimetabolites have received little attention with respect to cotton insect control measures. Initial research indicates these hormones to be relatively simple chemically and not species specific. The "juvenile hormone," since it inhibits molting and, consequently, the formation of the reproducing adult stages, appears to offer an entirely new approach to insect control.

• **Control Measures** — The development and use of antimetabolites as a control measure for insects is virtually unknown. One possible application might be in plant breeding for high antimetabolite levels in the plant.

An ecological study of the boll weevil in its native habitat may result in finding effective parasites, predators or diseases not present in the United States. A number of species have been effectively controlled by using this measure.

Utilization of the diapause phenomenon, as a new approach to insect control, is receiving a great deal of attention by cotton entomologists. The term diapause refers to the state of arrested growth or reproduction that is typical of many hibernating arthropods. In the boll weevil diapause exhibits two major physiological expressions. The first is a cessation of reproductive activity. In the female the reproductive organs become shortened and strophied, while in the male spermatogenesis ceases. The second major physiological expression is the high fat content of weevils in diapause. The fat accumulation undoubtedly serves the weevil as an energy storage mechanism, enabling it to survive the winter. Present evidence indicates it takes the boll weevil three weeks, or more, to accumulate the fat reserves required for successfully entering diapause, and surviving winter hibernation. This phenomenon presents entomologists with a "weak link" in the life history of the boll weevil. An intensive research program is in progress to exploit this "weak link"

Weevils begin entering winter quarters in mid-summer, depending upon a number of factors. The peak population entry, in mid-Texas, occurs about the time cotton is being picked. In other words, our spring crop of weevils was reared after termination of the usual control program followed the previous summer. It would appear logical, then, to do one, or both, of two things to greatly reduce, or possibly even eliminate, the weevil population entering diapause:

1. Continue an effective chemical program until the first kiling frost, or
2. Continue an effective chemical control program until the stalks are destroyed.

Unlike the chlorinated hydrocarbons, the organophosphorus compounds do not exhibit a significant reduction in insecticidal activity against fat weevils. Nor is there any evidence, thus far, of boll weevil resistance to calcium arsenate or the organic phosphate insecticides. It appears that either calcium arsenate or an effective organic phosphate insecticide could be utilized in this approach.

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My Observations of Cotton Production in Russia

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A cotton delegation consisting of three economists, one ginning engineer, one textile engineer, one agronomist-breeder, and an interpreter, visited Russia in 1958.

Several days were first spent in Moscow visiting the All-Union Agricultural Exposition and a large textile mill and attending cultural affairs. The visits to the Agricultural Exposition gave a very good picture of Russian agriculture and also furnished the group with valuable background information for the field tour.

The delegation flew by jet airplane to Tashkent, 2,000 miles southeast of Moscow. Tashkent is the capial of the Republic of Uzbekistan and in early September the weather was definitely summer. This is the center of cotton production as well as the production of cotton gin and textile mill machinery.

A large number of collective farms and a few State farms were visited. In general, the cotton observed was good. The yield this year of those fields inspected will range from one to three bales per acre. On the average, the yield will probably be about one and one-half bales per acre. This figure is not too far from the Russian prediction.

The farming practices in general were quite similar to those of the irrigated areas of the Southwestern U.S. Essentially all cotton is irrigated. Tractors are the source of power for land preparation, planting, and cultivation. Fertilizers, particularly nitrogen and barnyard manure, are used to a great extent. Almost no fertilizer deficiency was observed. The rates of nitrogen used vary from 60 to 100 kilograms per hectare (24 to 48 pounds per acre) actual nitrogen. Phosphate compounds are used at a somewhat lower rate and, to a lesser extent, potash. In addition, it seems to be common practice to apply up to 10 tons of barnyard manure per hectare. Naturally these rates vary with the soil.

The check row method of corn planting formerly used so widely by corn growers in the Mid-West has been given much credit for increasing yields of cotton per unit of land. On most soils the recommended spacing seems to be toward a 45-centimeter (approximately 18-inch) hill spacing and a 45-centimeter row spacing. There are usually two to three plants per hill. On some soils the recommended spacing is 60 centimeters. This method of planting has obviously increased the plant population per hectare and reduced the amount of hand weeding. It permits the use of cross cultivation.

• **Insect Problems** — The insects commonly found are bollworm, spider mite, cutworms, aphid, and Pectinophora malvella (hollyhock seed borer), which is closely related to the pink bollworm. This insect supposedly has infested only a small percentage of the cotton growing areas but is thought to be potentially as serious as the pink bollworm. It was not observed in the fields we visited. Bollworm damage was quite serious in some areas. In Azerbizhan, in the Caucasus, fields were seen that had received 10 applications of calcium arsenate and still suffered up to 25 percent loss.

Available insecticides are used in large quantities but obviously the complex chlorinated hydrocarbons are not produced in quantity. The scientists at the Plant Protection Institute discussed the use of systemics on a research basis but they are not being used except experimentally. There is said to be no evidence of insect resistance to any of the compounds being used at this time. DDT is the only organic insecticide that seems to be used to any extent.

• **Diseases** — There are several serious diseases of cotton in Russia. The one commonly referred to is gumosis, which we know as bacteria blight. This seems to effect the greatest damage during the early growing season. Considerable effort has been given in the breeding program to breed resistance into some of the varieties. It is said that some success has been attained. At the season we were there, blight was not in evidence on the mature plants. Seedling disease is another term that is given credit for much of the early season trouble. At first it was thought that these were the ordinary seedling disease organisms prevalent in our Cotton Belt, but in addition to these, it was later determined that the most serious one of the fungi involved is Thielaviopsis, which occurs as a root rot on the seedlings. All over the cotton growing area there was some evidence of wilt, particularly verticillium, and in Uzbekistan this disease was very widespread.

In certain areas of Tadjekistan, where much of the extra-long staple is grown, there is considerable leaf drop due to a leaf spot organism which was identified by the Russian workers as macrosporium. The chances are very good that this is actually cercospera leaf spot.

• **Production Practices** — In most fields of production research one gains the impression that there is quite a good knowledge of research techniques and ability, but in the field of plant pathology there has been either a lack of interest or a lack of enough competent workers to give the cotton production program the necessary assistance in this field.

Irrigation practices are for the most part quite similar to those of the irrigated Southwestern U.S. and water is used rather freely in the production of the crop. The number of irrigations

seems to vary with the soil types and usually are five or six per season. The method of application is by furrow with the use of head ditches across the upper end of the fields. The irrigation runs are usually 400 yards or less. When a field is longer than this, irrigation ditches are placed across the field at the appropriate intervals to keep the runs short.

There is no apparent shortage of irrigation water in any of the areas visited. As a matter of fact, water might well be listed as one of the outstanding assets of the Central Asian agricultural industry. In some areas alternate row irrigation is used. One very interesting observation made repeatedly during the trip was that late irrigations are practiced against the advice of the research workers. The reason for this is to get the absolute maximum production from a given unit of land even though this involves a fairly high percentage of immature bolls and poor quality fiber.

The cultivation of the crop seems to be pretty much the same as we are familiar with under similar conditions in the Southwest, with the exception of the fact that the cultivating equipment is much simpler and apparently not as effective in weed control. In addition, it is highly likely that there is considerable hand weeding as there seems to be a large surplus of field labor everywhere. The field labor for the most part is made up of women as there is a definite shortage of manpower in Russia following the war. Th most common method of land preparation is by moldboard plowing. This practice is highly recommended by the research agronomists, and seems to be widely used. It is recommended that relatively deep plowing be conducted every two or three years to aid water penetration and it was stated repeatedly that higher yields are obtained following such practices.

In every area visited the practice of hand topping of cotton was commonplace. It was said to increase the yield of the crop and to facilitate machine harvest. This practice quite often gave a very ragged appearance to the fields as the lateral fruiting branches developed to an abnormal length subsequent to the topping operation.

Practically all of the cotton stalks are removed from the field and stacked in large piles for winter fuel usage. In discussing this practice with the reseach people, it seems to boil down to simply a matter of whether the stalks are more important as a fuel or as residues incorporated in the soil for organic matter. As other forms of fuel are so scarce, there really is not much choice.

Defoliation was said to be widely used. On one large State farm at the easternmost point visited in the U.S.S.R., a demonstration was conducted. The plane used was a large byplane with a powerful motor and a wide wingspread which has 70 spray nozzles at about six-inch intervals underneath the lower wing. Calcium cyanamide was said to be used when dew conditions were adequate but for the greater part of the applications, magnesium chlorate was used. The demonstration looked quite adequate.

Harvest is about 85 percent by hand-pickers according to the official figures given by the Ministry of Agriculture, although as high as 50 percent mechanical harvesting is claimed by some collective farm chairmen.

• **Harvesting Operations** — There are two types of mechanical harvesters, neither of which was seen in operation. The horizontal spindle type is an obvious attempt to copy the International Harvester picker and is not held in much favor due to the complexity of the machine. The other type is a vertical spindle machine which is much more simple and is said to be quite effective. The vertical spindle is one of the few original ideas observed on the tour. There is also a stripper which is said to be used, but seems to be a rather ancient type machine. In addition, there is a portable cleaner which is moved to the procurement centers and, in some cases, to the collective farms for the purpose of removing excess burs and other trash of late season harvest.

The movement of seed cotton from the farm until it gets to the gin is an elaborate process. The cotton is dried to a certain extent after picking on the farm. Then it is sacked and removed to the procurement center and spread out again for further drying and even some cleaning and mixing may occur at this point. The drying is all by sun and wind, although mechanical dryers are said to be used. The drying lots are large and the cotton is so placed on them that it can be stirred several times during the day. Then the seed cotton is sacked again and moved to the gin where it is usually stacked in large piles of up to 400 tons to await ginning. By the time the cotton has moved into the gin, it is usually quite dry and much cleaner than we are accustomed to seeing.

• **Ginning Operations** — One outstanding feature was the high density press and excellent wrapping of the bales. It was the opinion of our ginning engineer that the rapid rate of ginning was damaging the inheritant quality of the cotton. The extra long staple gins observed were saw-ginning one and one-half inch cotton. This resulted in considerable damage to the high quality fiber. There are said to be roller gins although none was seen.

The research program conducted at the field experiment stations is particularly good in cultural studies and plant physiology. The experiment station laboratories are well equipped, well staffed and have excellent land for the research activities. Plant breeding is conducted along conventional lines even though there is usually a lack of interest in genetics or recognition of the science by the scientists. The objectives and methods of attacking the applied breeding problems are quite similar to the ones employed in this country. The major emphasis is on yield with disease resistance and quality considerations following closely. It was felt that the breeders are doing a good job. Their varieties are productive, have good quality and considerable progress has been made toward the breeding objectives.

It was apparent that the breeders and agronomists do not have the same concept of seed purity that is used in this country. The profusion of hybrids in the field, as well as the Arboreum characteristics of the common varieties and the method of seed cotton and seed handling would all indicate that seed purity is difficult or impossible to maintain under the existing system.

Gossypol content of seed is recognized as a problem by the chemists at the oil mills but little attention is being given to it other than trying to improve refining methods for better removal. The breeders are not working on the problem at all. Cottonseed meal with too high gossypol content is said to be used as fertilizer.

• **Future Plans** — There is a planned increase of some 50 percent in cotton production by 1965. This is to come from new land and from planned increase per unit of land. The delegation was interested in seeing some of the land reclamation program. Unfortunately this was limited to one area in Central Uzbekistan and to plane observations on numerous flights. In general there are large areas of desert land that can be leveled for irrigation. These lands for the most part are moderately to highly saline. The reclamation of saline soils is dependent on the available of good irrigation water. There seems to be a plentiful supply of water in the rivers of all the cotton areas visited and this should allow rapid reclamation of the saline soils. Some drainage is conducted by the use of drainage canals. The land leveling machinery observed is similar to that used in this country and is adequate to do the necessary job.

Russia is a very progressive and aggressive country in the field of cotton production and if the desire is to increase the output by a considerable amount in the next 10 years, there are adequate lands, water, know-how, and people to do the job. ◆ ◆

Weather Forecasting For Agriculture

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This year, the Weather Bureau started a program, aimed primarily toward cotton producers, that will give us a chance to put into practice many ideas for better utilization of weather and weather information in farming. Specialized weather services to agriculture, *through the crop season*, are now being provided for Mississippi's Delta Area. With the exception of the strictly seasonal services resulting from our Fruit-Frost and Fire-Weather program, this is the first specially designed and adequately supported agricultural weather service project in the Nation.

The problems in providing weather forecasts for agriculture that were encountered in setting up this pilot project are similar to those we might expect in other important agricultural areas. Our survey of the agricultural weather service requirements of the Delta indicated four basic needs which the current program has been designed to meet.

These needs are: First, the frequent issuance of weather forecasts geared to the current agricultural operations of the area; second, a method of communications capable of making weather advices immediately available throughout the service area; third, joint research and liaison between Weather Bureau meteorologists and workers in agricultural research and extension, and finally, an educational program to show the area's agricultural interests how to let

weather and weather advices work for them.

The program designed to meet these universal requirements of today's progressive agriculture for weather information might vary somewhat in other areas, but if this specialized service program were expanded, similar approach would be used.

• **Issuance of Weather Forecasts**—The staff at the primary Weather Bureau forecasting office in Mississippi, at the Jackson airport has been increased to allow meteorologist who are familiar with Delta agriculture to devote their full attention to detailed forecasts for the Delta. Although thus far this fall the agricultural forecasts have been issued only daily at about 5:00 a.m., when the program is in full operation these advices will also be issued around noon and 5:00 p.m., every day during the crop season. The forecasts include estimates of temperature, wind speed and direction, cloud cover, percent of areal coverage of precipitation, probable amount of precipitation, and dew intensity. These forecasts are for a 36-hour period and a general weather outlook for an additional 24-hour period is also added when indications that far in the future are sufficiently well defined.

In order to keep the forecasting office current on weather occurances in the Delta, a network of agrometeorological observation stations was established. During the crop season, observations are taken daily around 8:00 a.m. and phoned to our Jackson Office; these observations include the following information for the preceding 24-hour period: highest and lowest temperature, precipitation amount, evaporation, and total wind movement over the evaporating surface.

While these observations are of limited usefulness in the preparation of forecasts, they provide a great deal of assistance in evaluating the accuracy of the forecast made for the preceding day and help the forecaster to determine where forecasts went wrong and how they may be improved. The network of such stations in the Delta is at an average spacing of about 20 to 30 miles.

In addition to the regular daily agricultural weather forecasts prepared at the Jackson forecast office, John A. Riley, Research Agricultural Meteorologist at the Weather Bureau Agricultural Service Office at the Delta Branch Experiment Station at Stoneville, works with the staff at the Station in preparing agricultural weather summaries and operational agricultural interpretations of the 5-day and 30-day weather forecasts for release to the Delta's distributors of weather information.

• **Rapid and Widespread Distribution**—Adequate weather service for farmers requires that advices not only be issued frequently and in enough detail to form a basis for operational decisions, but that all the forecast users have ready access to the advices and that all the disseminators keep the advices current as they are revised in line with constantly changing conditions.

Back in 1947, the Weather Bureau embarked on another "pilot project" which has a direct bearing on the solution to the problem of mass delivery of weather advices to Delta farmers. This development was the establishment of a local public service weather teletypewriter circuit in New York City. Since that time, the "local loop" idea has expanded to the point where there are now nearly 70 such circuits in the U.S. The local public service loop consists of a send-receive teletypewriter located in the local Weather Bureau office connected to teletypewriter printers leased by radio and television stations, newspapers, press wire services, state and federal agencies, and similar interests. This type of communications circuit allows immediate and simultaneous release of weather information to all interests connected to the circuit.

A local public service loop has been in operation in Jackson, since 1956, and this circuit formed the nucleus of the recently established weather information communications system for the Delta area. The Jackson circuit was extended to the Weather Bureau facilities at Vicksburg, the newly established agricultural weather service office at Stoneville, and to the Weather Bureau forecast office at Memphis. The line connecting these Weather Bureau facilities was routed to link the telephone exchanges in each city in the Delta Area of Mississippi having mass distribution facilities.

Any interests in and around the Delta area may subscribe to this circuit by paying the fixed monthly charges for rental of a teletypewriter printer and the line mileage charge to their location from the telephone exchange of the nearest key city on the loop. Through this circuit, in addition to the agricultural weather advices, such information as warnings of emergency weather conditions, general forecasts for nearby areas, river reports and forecasts, national weather summaries, and similar information is immediately available.

• **Joint Research and Liasion** — To meet this requirement the Weather Bureau Agricultural Service Office was established at the Delta Branch Experiment Station and staffed by a research agricultural meteorologist with broad experience in weather forecasting and theory and its applications to agricultural production problems.

This position was set up not only to keep the forecasting staff informed of the status of agricultural operations in the service area and of the requirements for operationally useful weather forecasts but also to provide consultant services to the agricultural research workers working with weather-related agricultural problems. Since the opening of this office, several departments at Stoneville have begun experimentation in an attempt to develop techniques of forecasting from meteorological measurements the moisture content of cotton being harvested and the time of day that this moisture content will drop to a level sufficiently low to allow storage immediately after picking.

Another of the important joint efforts of the Experiment Station is the issuance of Delta Weather summaries which interpret the weather forecasts (particularly the 5-day forecasts and the 30-day outlooks) in terms of the weather's influence on agricultural operations.

• **Weather Service Educational Program**—We in the Weather Bureau hope that it will be possible to follow the lead of agricultural research and extension by informing farmers how weather and weather information can be used to improve production quality. We also hope that our excellent but limited close cooperative efforts can be expanded and that the extension service can include weather education in their already broad programs.

As a first step in this direction in Mississippi's Delta Area, staff member Jack Riley is devoting as much time as possible to the preparation of an educational series on agricultural weather services for publication in newspapers and agricultural journals. He has also embarked on a program to speak before as many interested agricultural groups as possible about the capabilities and limitations of the present agricultural weather service.

The surface of research into agricultural weather relationships has barely been scratched and there is surely a great potential for increasing the efficiency of agricultural production through expansion in this field. At present, however, it appears that utilization of presently known results of such research is lagging far behind that of other fields of scientific farming. Perhaps this is partly due to the fact that weather factors have greater variance and are more difficult to forecast than such factors as soil fertility, disease resistance factors in individual crop varieties, plant water requirements, etc. What we are attempting to do in the Delta project is to compensate for the lack of perfect or even near perfect weather forecasts by presenting the weather advices in terms of probability. In these terms, the operational user of the forecast can at least estimate the probable risk to his farming operations caused by weather factors.

◆ ◆

How We Use Weather Information In Cotton Production

EARLY C. EWING, JR.
Delta and Pine Land Co., Scott, Miss.

Cotton farmers today are realizing more than ever before what is meant by the cost-price squeeze. The need for making a choice between Plan A and Plan B has focused attention on the individual variables in cotton production. We can know the cost of seed, of fertilizer, of new equipment, and of labor and maintenance, but what will the weather be? There is no question that the greatest variable in cotton production is the weather. It affects yields and costs directly as well as indirectly through its effects on insects.

There are two basic principles in the use of agricultural weather information.

1. It must be available to you in a timely and usable form.

2. The farmer must inform himself and be able to act upon it.

The Weather Bureau makes the forecasts or reports the data, as the case

(Continued on Page 46)

Soybeans

(Continued from Page 17)

for soybean oil are peanut, sunflower, and copra. Put differently, if peanut, sunflower, and coconut oil production had remained constant from 1950 to 1956, per capita production of all edible and soap oils in 1956 would have averaged 22.8 pounds. The expansion rate in soybean oil production has not been greater than was needed to maintain a constant world per capita production of all fats and oils. There would have been an adequate market for soybean oil had not the production of the other oils also increased.

The declining world prices of fats and oils since 1951 have caused a high proportion of the increases in production to be absorbed in the areas of production rather than moved into world trade.

• **The Competitive Position**—U.S. soybeans, African and Asian peanuts, Filipino and Indonesian copra, and South American sunflower seed are in a competitive struggle for world markets. In this struggle soybeans are in a favorable position. High-protein concentrates have an expanding market that is growing much faster than population. It is a high-income, high-price market. Edible oils are in surplus in the high-income area of the world. Markets can be expanded only in the areas where per capita consumption is low. These are the low-income, low-price areas.

The advantage of soybeans lies in their relatively low yield of oil and high yield of meal. The oilseed crops with which soybeans compete most directly have a much higher percentage of oil and a lower percentage of meal.

• **Alternatives to Cheap Oil**—There are alternative suggestions for maintaining U.S. oil exports. One is to expand sale for foreign currency, a second is to donate oil to charitable agencies abroad, and a third is to work out a two-price system. As short-term, one-shot operations, they are workable and have been employed with success. Whether they can be used in sufficient volume to cope with an exportable surplus of the 1958 size is questionable. These measures will likely fail as permanent measures. The first weakness is that unquestionably they involve export-dumping, and this is a practice that invites retaliatory measures that will eventually stop its effectiveness.

• **What Price for Oil?**—There is no way to estimate the level of oil prices that would be needed to enable the U.S. to export all of the fats and oils necessary to bring production and use into balance. Clearly it is a price substantially lower than that of recent years. The guiding principle is to set the support price on soybeans low enough to give oil substantial downside room. The hour is late. Had we acted three or four years ago, there would have been time to experiment. Getting the support price too high gets the crop into trouble. Putting the support price below the equilibrium price has not proved harmful in the past—a support is not a ceiling when there is no surplus, as has been repeatedly shown in the case of soybeans.

During the 1957-58 crop year, the average price of soybean oil, tank cars at Midwest mills, was 10.8 cents per pound. A 20 percent reduction would be 8.6 cents. A 25 percent reduction would be 8.1 cents. A support price for soybeans low enough to permit eight-cent oil is a good point of departure.

• **What Price for Soybeans?**—The support price of soybeans should be set low enough to permit eight-cent oil, $45-per-ton meal, and a processing margin wide enough to call forth a large crush. In 1957-58 soybean meal averaged $53 per ton in bulk at Decatur. With lower feed grain prices and lower livestock prices (particularly for hogs), $45 appears to be a price that will permit maximum meal market expansion.

At eight cents the oil fraction of a bushel of soybeans is worth 88 cents, and at $45 the meal fraction is worth $1.06, for a total of $1.94. During 1957-58 the difference between track Illinois points price of No. 1 soybeans and product values computed in the above way averaged 24 cents. During the period October 1952 to September 1957, the average difference was 15.5 cents. Say that 20 cents is allowed. For No. 1 soybeans this is a track price of $1.74 or a farm price of $1.69. The national average support price is currently six cents below the Illinois support price. The national average support price would thus be $1.63, scaled off for lower than No. 1 quality.

A reduction of 46 cents per bushel in the support price appears drastic. But it is justified because the situation is drastic. Very soon decisions are going to be made that will determine whether soybeans are going to return to being a commercial, competitive crop or whether they are going to become wards of the government. By historical standards a reduction of 46 cents in soybean supports has a fortunate precedent. In 1953 the support price was $2.56; in 1955 it was $2.04. The expansion in the soybean crop during the past five years was made possible by this reduction.

That the support price should be set at $1.63 does not mean that the average price will be that low. In my judgment the 1959 soybean crop will sell at an average price above $1.63. The support must be set enough below the equilibrium to provide for contingencies. If it is not set below the equilibrium price, it can do more harm than good. The 1958 situation is a good illustration. During the 10 years prior to 1958, the national average yield of soybeans was 21.1 bushels per acre. If $2.09 is an equitable support price, then $44.10 per acre is an equitable gross income; $44.10 divided by the 1958 yield of 24.5 bushels equals $1.80 per bushel. Farmers will be well advised to save some of their soybean income from this year to help compensate for the loss of income that will result from this year's high price support.

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Cotton Style Show Held in Amsterdam

SOME of the best examples of home sewing with cotton fabrics from the skilled needles of Dutch women were highlighted recently at this children's wear show in Amsterdam. Sponsored by The Netherlands Katoeninstituut in cooperation with one of Holland's largest stores, the show brought together some 55 of the nation's best pieces of sewing for the finals—plus 55 mamas, considerably more children, and a good sprinkling of press representatives. The sedate young miss in the photo was a finalist. The Institute is a Cotton Council International cooperator.

$200,000 Gin Fire

Fire loss was more than $200,000 when flames destroyed Utica Lumber and Gin Co., Utica, Miss., in December. J. B. Hutchins is owner.

Underplanting Costly

Underplanting cotton allotments cost Mississippi farmers $5,500,000 in 1958, C. M. Waller, Extension cotton specialist, estimates.

Cotton Employs 5,000 Persons in Dallas

Five thousand persons in Dallas County are employed in all phases of the cotton industry, according to the nation's first survey to show what agribusiness means to a city.

Ninety thousand are employed in all agricultural industry in Dallas County. A preliminary report of the research was made recently before the Dallas Agricultural Club. Dallas Chamber of Commerce, the Club and A&M cooperated in the study, made by Dr. Donald S. Moore of A&M.

Agribusiness—the business of serving agriculture—accounts for almost one-third of all employment in Dallas County. Total buying income of persons in agribusiness was between $316 and $525 million in 1957.

Excerpts from the report on the cotton industry follow:

• **Gin Machinery**—Dallas is a major center for the manufacture of gin and oil mill machinery. The total number employed in this industry normally amounts to almost 2,000. In 1954, the last year for which data are available, the value of gin machinery shipments in the county, including inter-plant transfers, amounted to $14 million. Dallas is a major export market for cotton gin machinery, shipping approximately $3,500,000 worth of equipment during 1957.

• **Cotton Trade**—Dallas is one of the

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major spot cotton markets in the nation. From 1950 to 1956, between 1,250,000 to 1,500,000 bales were purchased annually, making Dallas second in size only to Memphis as a spot cotton market. In 1957, the volume traded dropped substantially, putting Dallas behind Fresno and Houston as well as Memphis. There are 137 members of the Dallas Exchange, with total employment by merchants and traders of slightly over 1,000 people.

• **Finance and Insurance**—The large volume of cotton traded in Dallas requires substantial amounts of finance and insurance. Commodity loans held by Dallas banks, of which cotton accounts for over nine-tenths, currently total slightly over 50 million.

• **Textiles and Fabrics**—The manufacturers of textile mill products accounts for a total employment of slightly less than 1,000 people in Dallas County and a total payroll of over $3 million. In addition, considerable quantities of cotton fabrics are used in the large apparel manufacturing industry in Dallas, but available data do not permit an estimate.

• **Farm Machinery**—Dallas is the center for farm machinery distribution in the Southwest, wholesale distributing firms accounting for employment of over 900 and sales of approximately $50 million. These sales account for approximately 85 percent of the estimated total annual purchases of machinery by Texas farmers. Over 1,000 cotton strippers, alone, were shipped from Dallas in 1957.

• **Cotton Gins, Compresses, Warehouses**—There are about four gins, one compress and two cotton warehouses in the county. Employment is estimated to total between 200 and 300 during the fall. Estimated receipts from cotton warehousing total about $150,000.

• **Transportation of Cotton**—The transportation of cotton and cotton products is an important source of revenue for Dallas. For nine railroad systems servicing Dallas, freight revenues derived from hauling cotton and its products (cottonseed oil and meal, bagging and ties, and cotton textiles and fabrics) totaled about $27,500,000. However, this amounted to only about two percent of total freight revenue received. This does not include revenue for hauling items used in cotton production such as farm machinery, fertilizers and insecticides, nor include freight revenue received by the trucking firms in Dallas.

• **Use of Cotton**—It is impossible to estimate the quantities of cotton and cotton products used in Dallas manufacturing industries but they are substantial. The estimated value of cotton linters and textile cloth purchased during 1957 by five of the larger furniture and mattress manufacturing companies in Dallas amounted to at least $2,500,000. One large food manufacturing concern purchased 20 million pounds of cottonseed oil during its most recent fiscal year.

• **Cotton Trade Groups**—Cotton trade and service organizations in Dallas include the Texas Cotton Growers' Association, National Cottonseed Products Association, Cotton Gin and Machinery Supply Association, Texas Cottonseed Crushers' Association, Texas Cotton Growers Coop Association, Certified Seed Growers Association, and The Cotton Gin and Oil Mill Press. Employment by these organizations totals between 200 and 300. In addition, conventions of persons engaged in the cotton trade, such as the Texas Cotton Ginners' Association, draws several thousands visitors to Dallas annually.

Malaya Ships Less Copra

Malayan copra and coconut oil exports were smaller in the first three quarters of 1958 than in the same 1957 period.

Copra exports dropped six percent from a year earlier and coconut oil production was down 17 percent. Most oil mills had to shut down or curtail operations because of copra scarcity, USDA reports.

Odis Tew Is Honored

Odis Tew, manager of the Grassland Cooperative Gin at Post, Texas, was given special recognition at the annual meeting of the membership. Tew has been a member of the co-op since its founding in 1933, and during those 25 years has never missed a meeting. He has worked for the gin in some capacity every year since it was organized. For the past 14 years he has served as manager. L. S. Turner, president, conducted the annual meeting. Other officers and directors are Ted Aten, vice-president; Thurman Francis, secretary; Amos Gerner, Bishop Mathis, Glenn Norman and Gerald Norman. Tew also served as treasurer.

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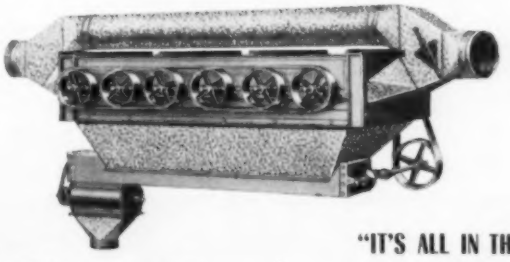

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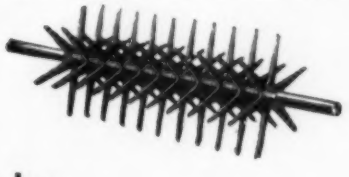

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• No Cotton Lover

A BUDDING POET at Obion, Tenn., is not a lover of cotton. Lydel Sims, Memphis Commercial Appeal columnist, reports that Iris Hilliard gave her English class a poetry-writing assignment just before the country schools closed for cotton picking. Barbara Mays wrote the following:

"Fields white with cotton
"Make me sick,
"But to get new clothes,
"I must pick."

• Pink Bollworm Crisis

A CRISIS in the pink bollworms' spread may be developing. The National Association of State Departments of Agriculture has called for a meeting with USDA representatives to review the entire situation.

"We hope that out of this meeting may come a plan for united effort," comments Arkansas State Plant Board. "If it does not, we may as well give up the fight. The pink bollworm has, this season, been found just one county removed from the state of Mississippi's Delta, just one county removed from Tennessee, just one county removed from California's Imperial Valley, and less than 20 miles from the Missouri Bootheel."

USDA's current report shows the pink bollworm found for the first time in Ashley, Clay, Drew, Faulkner and White Counties of Arkansas, all outside the regulated area; in four Louisiana parishes (Union, Rapides, Lincoln and Grant) outside the regulated areas; and the heaviest infestations on record in 18 Oklahoma counties. Texas and Mexico also reported increased infestations in 1958, and the pink bollworm reappeared in Arizona.

• Drink to Death—on Water

MICE that drink themselves to death—on water—must offer some kind of moral for folks, although we're not quite sure what. Government scientists have found mice that drink five times their body weight of water daily, without an apparent need for the fluid, and kill themselves. Researchers don't know why, but believe genes controlling the thirst mechanism have something to do with it.

• Warfare with Sex

SEX HABITS of mosquitoes may help to control malaria, as they have helped cattlemen to control screwworm flies. But, space travel isn't going to stop reproduction and development of some flies. These facts are indicated by USDA investigations designed to help mankind's endless battle with pests.

Making male mosquitoes sterile by irradiation has been 80 percent effective in controlling malaria-type mosquitoes under laboratory conditions, researchers at Orlando, Fla., report. The method offers promise and may be useful in combination with other control methods. The screwworm fly has been eradicated by such a program in isolated areas, and the U.S. cattle industry is interested in wider application of sterlization of the fly.

USDA also announces that insects, whirling under constant pressure simulating 10 times the force of gravity, are developing and reproducing through several generations. These experiments, with fruit flies, are being made to find whether there is any correlation between stresses of space flight and normal life processes. To date, researchers have found that time required to develop from eggs to adults is slightly longer for the spinning flies. Yield of adult insects from given number of eggs was reduced by about 60 percent. It is considered remarkable that some 40 percent can survive this sustained pressure for weeks and still reproduce normally.

• Cotton-Beef Study

CONVERSION of a 132-acre South Carolina cotton farm into a 161-acre beef cattle and grain operation would increase annual cash receipts from $3,400 to $9,022 yearly within five years. This is the conclusion reached in a USDA-South Carolina Experiment Station study. A USDA press release says:

"Estimated annual farm income would rise during the same five-year period from $900 to $3,700, and returns to the operator for his labor and management would increase from a loss of $190 annually to a net income of $2,100. Meanwhile, it was estimated, the appraised value of the farm property (including land, buildings, livestock, equipment, stock, and seed) would rise from about $16,000 to nearly $35,000 by the end of the fourth year, and would then decline with normal depreciation to about $27,000 at the end of the tenth year.

"To accomplish such a beneficial transformation, not only would it be necessary for the farmer to engage in a new sort of farming, with the assistance of new methods and equipment, but also he would need to find new sources of credit to finance the change.

"One of the first and biggest problems to be solved in making the change from cotton to beef and small grains is to acquire a beef herd. The study showed that the value of cattle on the original farm—$330—would have to rise to $10,000 during the first three years of transition. The large initial investment indicated by these figures would result from buying brood cows as soon as grazing can be assured by other changes in farm practice."

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W. D. GRIFFIN

GERALD B. BREWER

Producers Cotton Oil Promotes Two

W. D. GRIFFIN, vice-president of Producers' Cotton Oil Co., Fresno, will serve the company in double capacity, Harry S. Baker, president, has announced. Griffin, formerly sales manager, will serve as advisor to the president and advisor to the sales department. He joined Producers' in 1935 as manager of the cotton department, became sales manager in 1937 and vice-president in 1955. The appointment of GERALD B. BREWER as sales manager for Producers', also has been announced by Baker. Brewer will handle the sale of cottonseed oil and cotton linters for Producers of California, Imperial Valley and Arizona. He will continue his present duties as assistant to the president. He started with Producers' as a member of its field department in 1953 after serving two years as a Lieutenant in the U.S. Air Force. In 1954 he became personnel manager, and a year later assistant to the president. He was graduated from the University of Southern California in 1951 with a degree of Bachelor of Arts in Social Science. He is a director of the American Cancer Society and the Fresno Safety Council. He also serves as secretary and director of Junior Achievement in Fresno and vice-president of the Bulldog Foundation.

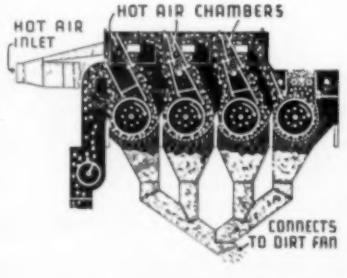
Textile Industry Men Set Electrical Convention

The Textile Industry Subcommittee of the American Institute of Electrical Engineers has announced plans for its annual convention on Electrical Application in the Textile Industry. The conference will be held April 2-3 at the Heart of Atlanta Motel in Atlanta, Ga.

This conference is designed to bring before managers, engineers, technicians and master mechanics of the textile industry information concerning application of new equipment and discussion of operational problems of existing equipment. This is the only conference of its kind in the Southeast at which electrical developments that have an impact on the textile industry and mutual problems can be discussed and solved.

Seven papers will be presented. These include "What Brush Should I Use For Commutation?" presented by the Stackpole Carbon Co.; "Semi-Conductors and How They Work," by the Westinghouse Electric Corp.; "Application of Semi-Conductor Drives in the Textile Industry," by C. D. Beck, senior engineer, General Electric Co.; "Is Your Electrical Equipment Safe?" by Guy Booker, safety supervisor, Chemstrand Corp.; "The Disease Called Power Factor and How Capacitors Can Profitably Cure This Disease," by H. J. Forbes, Celanese Corp. of America; "New Techniques in Control Wiring Diagrams and Use of These Diagrams in Trouble Shooting," by Reliance Electric Corp., and "Lighting For Inspection Processes," to be presented by Sylvania Electric Products, Inc.

The talks will be presented from 10 a.m. until 5 p.m., Thursday, and from 9 a.m. until noon, Friday. A social hour and banquet are scheduled for Thursday evening.



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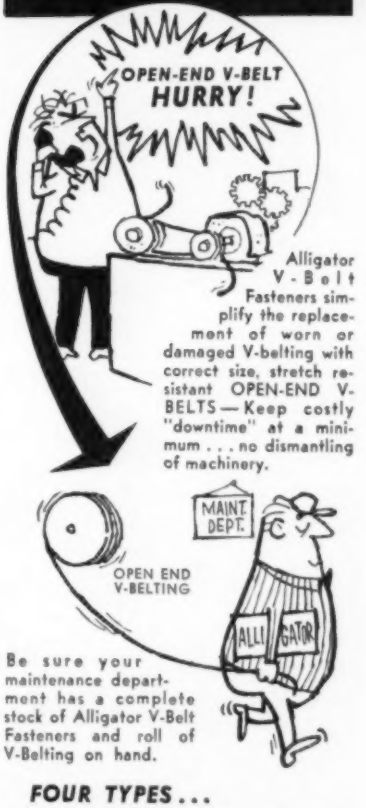
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Taking minimum soil temperatures eight inches deep in the bed at Lubbock, Texas.

Soil Temperature

A Cotton Planting Guide for the High Plains

By

EMMETT R. HOLEKAMP

and

ELMER B. HUDSPETH

Agricultural Engineer, USDA, cooperating with Texas Experiment Station, Lubbock; and former Agricultural Engineer at Lubbock, respectively.

FARMERS around Lubbock in the High Plains area of Texas are tuning in on the weather forecasts to get the "low down" on when to plant cotton. However, it isn't the weather forecast in which they are most interested; it is the soil temperature that has proved to be the most helpful guide in deciding when to plant cotton.

Five years' results of research at the Texas Agricultural Experiment Station at Lubbock show that more rapid and complete seedling emergence is obtained by delaying planting until the average minimum soil temperature has reached a level of 60° F. at a depth of eight inches in the bed. The Experiment Station records daily readings during the planting season and this information is passed on to the farmers through TV weather programs, farm radio programs and local newspapers.

A 10-day average of the minimum soil temperature at eight-inches deep in the bed is now recommended as the guide. Daily minimum temperature is not reliable as a guide because it fluctuates as much as 10° from day to day, depending on the weather. Also, when the 10-day average minimum of 60° has been reached, the soil has warmed to some depth forming a reservoir of warmth to offset the effects of short periods of cool or wet weather.

Temperatures are taken at 8 a.m. because recorded temperature readings have shown that the minimum generally occurs sometime between 7 and 9 a.m. at the eight-inch depth. The 8 a.m. temperatures have been found practical by experience. Temperatures are easily taken with a thin stemmed dile thermometer or glass thermometer. The thin stemmed dial thermometer is easily inserted into the soil. Some difficulty may be experienced with the glass thermometer due to its larger diameter.

Cotton planted after minimum temperature has reached the 10-day average of 60° F. generally emerges very rapidly and makes good growth. Cotton planted in the colder soil and not covered more than two inches deep requires 10 to 14 days to emerge, whereas it requires only five to seven days for cotton to emerge in the warmer soil.

Planting in the warm soil has other advantages, such as reduced rain hazards with shorter emergence periods and less competition of weeds because the cotton grows faster.

Better total emergence of seed planted in the warm soil can also be expected. The emergence in the warmer soil is from 30 to 50 percent of the seed planted, whereas in colder soil the emergence is generally less than 30 percent of seed planted. Yield records show that plantings made after the recommended temperature is reached have out-yielded the plantings in cold ground four out of five years. The minimum recommended average of 60° generally occurs during the first week of May.

Californians Choose Council Delegates

Harry G. Thompson, Bakersfield, chairman of the California State Unit of the National Cotton Council, has announced the five California delegates to the Council's annual meeting. They are: Henry McLaughlin, producer; Matthew Vinson, ginner; Winston P. Handwerker, warehouseman; Frank Doan, merchant; and W. B. Coberly, Jr., crusher.

Other Californians serving as delegates for the various industry segments are:

Producers: Edwin J. Neufield, and Eugene Hayes.

Ginners: Harry S. Baker, and Thompson.

Warehousemen: W. D. Griffin, and Zach L. Felder.

Merchants: R. M. Blankenbeckler, and J. L. Hurschler.

Crushers: P. W. Peden, and J. Lindsey Gunn.

Willard C. Lighter Honored For Work by University

Willard C. Lighter, executive vice-president of The Glidden Co., Cleveland, was presented the University of Minnesota's Outstanding Achievement Award at a recent banquet at the Leamington Hotel in Minneapolis.

The award, conferred by the University of Minnesota's Board of Regents, was made to Lighter ". . . . . for the achievement of national recognition in the processing and marketing of industrial oils." The presentation was made by Lester Maklerson, a member of the University's Board of Regents. Lighter is a 1933 graduate of the University of Minnesota, holding a degree of Bachelor of Business Administration.

Seedsmen Plan Meeting

Tennessee Seedsmen's Association will meet Feb. 15-16 at the Andrew Jackson Hotel, Nashville.

• Field Crops Station Site Is Developed

A BAND of dedicated Fresno County ranchers and agribusiness operators in the San Joaquin Valley in California, are seeing their dream become a working reality—The San Quan Joaquin Valley Crops Station, the first of its kind in that part of the state. The ground has been leveled, the roadways laid and the well is ready to pump irrigation water. As soon as the irrigation system, some dwellings and a laboratory can be built, the project can get underway.

J. L. Myler, director of field stations for the University of California, has announced the first experimental planting may be made by Feb. 1.

Ray Provost, a Producers' Cotton Oil Co. vice-president and chairman of the trustees, along with others on the board, declare that the station is intended to serve the entire San Joaquin Valley for the improvement of present field crops and development of new ones to meet changes in the agricultural economy.

"We have to progress to survive; it's vital to the West Side," Provost emphasized. "This is a crash program; it has to be. Any 12 months lost cannot be recovered." He added that alfalfa seed is expected to be the first research project.

Sherman Thomas, a veteran West Side grower, credited the work of Luther Jones at Davis with the development and present standing of the alfalfa seed industry in the valley. He said modern scientific farming, as exemplified on the West Side, is so highly competitive no one can afford to ignore research findings and the whole San Joaquin Valley can use such research help on all of its crops.

• **Trouble Shooting Job**—Fresno County Farm Adviser Ray C. Crouch, who was credited by Provost with much of the campaigning effort which put over the field station idea, termed the station's role "a trouble shooting job."

The station, located at the corner of Oakland and Lassen Avenues south of Five Points, comprises one half section of ground which will be developed in three land units. The initial developments of the first 80-acre test planting area, well drilling and irrigation system, will be built with the $250,000 trust organized by the nine original trustees: Provost, W. L. Farrell, vice-chairman; Don Patterson, secretary; Elmer H. Hansen, treasurer, Thomas, Vernon Britton, Frank Coit, Frank Diener and T. J. Taylor.

• **$115,000 Pledged**—Provost and Diener, chairman of the planning committee, reported recently a total of $115,000 in pledges and contributions of cash. After the first unit is completed the entire 320 acre site and improvements will be given to the University, which will continue the development and operation through the two remaining units.

Eventually the Station will have housing for some 10 employees and their families along with a machine shop, laboratory and office buildings, Myler reported. An air strip also will be laid. These improvements probably will cover five years' work, he said.

Addresses Engineers

JAMES A. LUSCOMBE, engineer in charge of the Southeast Cotton Ginning Research Laboratory, Clemson, S.C., addressed the winter meeting of the American Society of Agricultural Engineers, Dec. 17 in Chicago. Luscombe spoke on the subject, "Conditioning, Handling and Storing Seed Cotton Prior to Ginning." He outlined the research done to date on the subject, and research to be undertaken. The full text of the address may be obtained from the Society or the speaker.

HAVING TROUBLE WITH
GIN COMPRESSED BALES?

Many gins receive complaints on the quality of their gin-compressed bales. "They are broken ... below density ... over-tared." This is entirely due to the low moisture content of the cotton and is not the fault of the press. Abnormally dry cotton (below 4% moisture) is so spongy and springy that when compressed to standard density, the usual number of ties will not hold the bale. Unless ginners put *more ties on* or *less cotton* in the bale, the ties often break.

Just What Can You Do About It?

Use the approved method of moisture restoration developed and recommended by the Stoneville Ginning Laboratory. With a Statifier at the lint slide restoring 6 to 8 pounds of moisture per bale, you can consistently turn out neat, full-weight bales. Write today for detailed information about the Statifier units with the new, completely dependable "Magic Wand" control.

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Use BELTON SUPERIOR BAGGING and they'll KEEP COMING BACK!

2 lb. weight — 21 lbs. TARE
Open weave Jute Bagging
Pretested for uniform strength
Makes cleaner, stronger bales

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CALENDAR

• Jan. 10—Gin Machinery and Supply Association, Inc., annual meeting at 10 a.m. in the Dallas Room of the First National Bank. Edward H. Bush, 3724 Race St., Dallas, president.

• Jan. 18-20 — Texas Cotton Ginners' Association meeting of directors and allied industry representatives. Jack Tar Hotel, Galveston, Texas. For information, write Edward H. Bush, executive vice-president, P. O. Box 7665, Dallas 26.

• Jan. 27—Cooperative Ginners' Association of Oklahoma, annual meeting at Hobart. Lucile Millwee, P. O. Box 631, Carnegie, secretary.

• Jan. 29—Cooperative Ginners' Association of Oklahoma, annual meeting at Hobart. Lucile Millwee, P. O. Box 631, Carnegie, secretary.

• Jan. 30 — Oklahoma Cotton Ginners' Association annual convention. Skirvin Hotel, Oklahoma City. Mrs. Roberta Reubell, secretary, 307 Bettes Building, Oklahoma City.

• Feb. 5-7—Southeastern Gin Suppliers' Exhibit. Biltmore Hotel, Atlanta. Concurrent with meetings of Carolinas, Georgia and Alabama-Florida Cotton Ginners' Associations. For information, write Tom Murray, P. O. Box 1098, Decatur, Ga.

• Feb. 6-7—Georgia Cotton Ginners' Association annual meeting. Biltmore Hotel, Atlanta. Tom Murray, P. O. Box 1098, Decatur, Ga., executive vice-president.

• Feb. 6-7 — Alabama-Florida Cotton Ginners' Association annual meeting. Biltmore Hotel, Atlanta. Tom Murray, P. O. Box 1098, Decatur, Ga., executive vice-president.

• Feb. 6-7—Carolinas Ginners' Association annual meeting. Biltmore Hotel, Atlanta. E. O. McMahan, P. O. Box 512, Bennettsville, S.C., executive secretary.

• Feb. 8—National Cotton Ginners' Association meeting, Biltmore Hotel, Atlanta, Ga. Tom Murray, P. O. Box 1098, Decatur, Ga., executive vice-president.

• Feb. 9-10—National Cotton Council annual meeting. Dinkler Plaza Hotel, Atlanta. For information, write National Cotton Council, P. O. Box 9905, Memphis.

• Feb. 15-17 — Texas Cooperative Ginners' Association, Texas Federation of Cooperatives and the Houston Bank for Cooperatives, annual joint meeting, Convention Center, Galveston. Bruno E. Schroeder, executive secretary, 307 Nash Building, Austin, Texas.

• Feb. 16-17 — Cottonseed Processing Clinic. Southern Regional Laboratory, New Orleans. Sponsored by USDA and Valley Oilseed Processors' Association. C. E. Garner, 416 Exchange Building, Memphis, Association secretary.

• March 3-4—Western Cotton Production Conference. Westward Ho Hotel, Phoenix, Ariz. Southwest Five-State Cotton Growers' Association and National Cotton Council, P. O. Box 9905, Memphis 12, sponsors.

• March 9-11—Midsouth Gin Supply Exhibit. Midsouth Fairgrounds, Memphis. Sponsored by Arkansas-Missouri Ginners' Association, Tennessee Ginners' Association and Louisiana-Mississippi Ginners' Association, which will have annual meetings in conjunction with Exhibit. For information on exhibit, write W. Kemper Bruton, P. O. Box 345 Blytheville, Ark.

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• March 12-14—Texas Cotton Association annual convention at the Statler Hilton Hotel, Dallas. L. T. Murray, Waco, executive vice-president.

• March 13-15—West Coast Division, International Oil Mill Superintendents' Association, annual meeting. Bakersfield, Calif. Harold F. Crossno, California Cotton Oil Corp., Los Angeles, general chairman.

• April 5-7—Texas Cotton Ginners' Association annual convention, State Fair of Texas grounds, Dallas. Edward H. Bush, executive vice-president, P. O. Box 7665, Dallas.

• April 6-7 — Valley Oilseed Processors' annual convention, Buena Vista Hotel, Biloxi, Miss. C. E. Garner, 416 Exchange Building, Memphis, secretary.

• April 17-18—Oklahoma State Cotton Exchange convention. Lake Texoma Lodge. For information write Mrs. M. Rascoe, secretary-treasurer, 244 American National Building, Oklahoma City 2.

• April 21-22 — National Cotton Compress and Cotton Warehouse Association, annual meeting at the Galvez Hotel, Galveston, Texas; an equipment show will be held at the Moody Center at Galveston,. For information write John H. Todd, executive vice-president, P. O. Box 23, Memphis 1.

• May 4-5—American Cotton Congress. Waco, Texas. For information, write Burris C. Jackson, chairman, Statewide Cotton Committee of Texas, Hillsboro.

• May 10-11-12 — National Cottonseed Products Association annual convention. Mark Hopkins and Fairmount Hotels, San Francisco. John F. Moloney, 43 North Cleveland, Memphis, secretary-treasurer.

• May 18—Oklahoma Cottonseed Crushers' Association annual meeting. Lake Texoma Lodge. Mrs. Roberta Reubell, secretary-treasurer, 307 Bettes Building, Oklahoma City.

• June 7-9 — Tri-States Oil Mill Superintendents' Association annual convention. Buena Vista Hotel, Biloxi, Miss. B. C. Lundy and Woodson Campbell co-chairmen.

• June 7-8-9—Texas Cottonseed Crushers' Association annual convention. Shamrock Hotel, Houston. Jack Whetstone, 624 Wilson Building, Dallas, secretary-treasurer.

• June 14-16—Southeastern Cottonseed Crushers' Association meeting. The Castle in the Clouds, Lookout Mountain, Tenn. For information write, C. M. Scales, secretary, 318 Grand Theatre Building, Atlanta 3.

• June 17-19 — Southwestern Peanut Shellers' Association convention. Baker Hotel, Mineral Wells, Texas. John Haskins, Durant, Okla., secretary-treasurer.

• June 21-23 — International Oil Mill Superintendents' Association annual convention. Galvez Hotel, Galveston, Texas. H. E. Wilson, secretary-treasurer, P. O. Box 1180, Wharton, Texas.

• June 21-23—North Carolina Cottonseed Crushers' Association and South Carolina Cotton Seed Crushers' Association joint annual convention. Hotel Fort Sumter, Charleston, S.C. For information, write Mrs. Durrett L. Williams, P. O. Box 514, Columbia, S.C.

• June 24-26 — Mississippi Cottonseed Crushers' Association annual convention. Buena Vista Hotel, Biloxi, Miss. Gordon W. Marks, P. O. Box 1757, Jackson, Miss., secretary-treasurer.

Cotton Council President Appoints Committees

President Harry S. Baker of the National Cotton Council has appointed members of four committees that will hear reports and make recommendations at the Council's annual meeting in Atlanta, Feb. 9-10.

Committees and their members and advisory members appointed by Baker follow:

Committee on Production and Marketing—Cecil H. Collerette, Casa Grande, Ariz., chairman; J. D. Hays, Huntsville, Ala., vice-chairman; R. S. Barnett, Jr., Altheimer, Ark.; G. C. Cortright, Jr., Rolling Fork, Miss.; A. B. Emmert, Danville, Va.; A. W. Fisher, Kannapolis, N.C.; P. E. Harrill, Oklahoma City; J. H. Henry, Melrose, La.; Robert L. Horton, Waxahachie, Texas; W. Gordon McCabe, Greenville, S.C.; J. F. McLaurin, Bennettsville, S.C.; E. L. Puckett, Amory, Miss.; A. L. Story, Charleston, Mo.; and Adolph Weil, Jr., Montgomery, Ala.; N. C. Blackburn, W. R. Flippin, and George M. Powell, all of Memphis. Advisory members—Eugene Butler, Dallas; W. O. Fortenberry, Lubbuck; Otto Goedecke, Hallettsville, Texas; M. Earl Heard, Shawmut, Ala.; J. R. Kennedy, Bakersfield, Calif.; R. D. McCallum, Memphis; Ellison S. McKissick, Sr., Easley, S.C.; J. Winston Neely, Hartsville, S.C.; and Ray Provost, Fresno.

Committee on Utilization Research—J. M. Cheatham, Griffin, Ga., chairman; Roy B. Davis, Lubbock, vice-chairman; Alfred Bessell, Jr., Houston; Eugene Hayes, Madera, Calif.; Tom J. Hitch, Columbia, Tenn.; T. L. Hurschler, Pasadena, Calif.; W. A. Joplin, Jr., Hayti, Mo.; E. H. Lawton, Hartsville, S.C.; Garner M. Lester, Jackson, Miss.; C. W. Lewis, Deming, N.M.; Roger Milliken, Spartanburg, S.C.; D. H. Morris, III, Geneva, Ala.; A. G. Paxton, Greenville, Miss.; Frank S. Pope, Villa Rica, Ga.; Jess G. Stratton, Clinton, Okla.; Marshall O. Thompson, Mesilla Park, N.M.; and C. D. Tuller, Atlanta. Advisory members—E. J. Cecil, Fresno; James A. Chapman, Inman, S.C.; Sydney M. Cone, Jr., Greensboro, N.C.; John P. Duncan, Jr., Macon, Ga.; Ot's W. Howe, Wabash, Ark.; C. R. Sayre, Scott, Miss.; and J. E. Spears, New York City.

Committee on Sales Promotion—W. B. Coberly, Jr., Los Angeles, chairman; Harold F. Ohlendorf, Osceola, Ark., vice-chairman; R. M. Blankenbeckler, Fresno; Stanton Brown, Waco, Texas; M. M. Bryan, Jr., Jefferson, Ga.; Edward W. Cook, Memphis; Scott E. Cramer, Chicago; C. H. DeVaney, Ccahoma, Texas; W. L. Gatz, Jr., Paragould, Ark.; C. A. Harvin, Jr., Summerton, S.C.; Marion W. Heiss, Greensboro, N.C.; C. P. Key, Lodge, S.C.; Sam LaFaver, Watonga, Okla.; Edwin J. Neufeld, Wasco, Calif.; Ralph R. Norman, Fort Deposit, Ala.; Brackett Parsons, Boston; William E. Reid, New York City; Wm. King Self, Marks, Miss.; J. Cra'g Smith, Sylacauga, Ala. Advisory members—H. R. Gill, Evanston, Ill.; Mitchell Landers, El Paso; W. Ralph McIntyre, Wilmington, Del.; J. B. Mayer, Fresno, Calif.; M. E. Stauffer, Naperville, Ill.; Bernard H. Tholen, New York City; Wm. G. Werner, Cincinnati; R. E. L. Wilson, III, Wilson, Ark.

Committee on Foreign Trade — Hugo Dixon, Memphis, chairman; A. E. Hohenberg, Memphis, vice-chairman; James S. Francis, Phoenix; F. E. Grier, Greenwood, S.C.; J. Lindsey Gunn, Shafter, Calif.; Burris C. Jackson, Hillsboro, Texas; R. H. Jewell, Chickamauga, Ga.; E. G. McKenzie, Jr., Macon, Ga.; J. S. Morrison, Fort Worth; G. F. Parker, Tiptonville, Tenn.; Walter L. Randolph, Montgomery, Ala.; Wilmer Smith, Wilson, Texas; J. H. West, Bishop, Texas; and J. Clyde Wilson, Buckeye, Ariz. Advisory members—Marc Anthony, Dallas; C. A. Cannon, Kannapolis, N.C.; Everett R. Cook, Memphis; Edmund E. Ebert, New York City; Lamar Fleming, Jr., Houston; Harris L. Kempner, Galveston; Jack J. Stoneham, Dallas; Howard Stovall, Stovall, Miss.; J. W. Tapp, Los Angeles; and S. Y. West, Memphis.

Ginner Delegates Named To Cotton Council

Arkansas-Missouri Cotton Ginners' Association has selected delegates to the National Cotton Council.

They include R. S. Barnett, Jr., Altheimer, Ark.; and W. A. "Bill" Joplin, Hayti, Mo., with terms to expire in 1961.

Other delegates are Pat Burlison, Hornersville, Mo., term expires Dec. 31, 1959, and L. Fahrety Pinkley, Portageville, Mo., term expires Dec. 31, 1960.

Arkansas delegates are Thomas Murchison, Coy, term to expire Dec. 31, 1959; and Fred Carter, Lake City, term to expire Dec. 31, 1960.

Sixth Graders Have Cotton Christmas

Sixth graders at North Avenue U School in Lubbock had a Cotton Christmas. Under the direction of their teacher, Bob Wall, they picked enough cotton to pay for a Christmas dinner — and had enough money left over to finance a trip to Carlsbad Caverns. J. H. Felton, a cotton grower, liked their project so much that he gave them all of the cotton they could pick up behind a mechanical stripper in his field. The kids gathered a bale, which will pay for their trip.

Retired Chemist Off To See the World

T. L. (Teddy) Rettger of Memphis, who recently retired after 34 years as a chemist with Buckeye Cellulose Corp., boarded a Greek freighter and sailed in mid-December from Mobile, Ala., starting a trip taking him around the world, eventually.

He is bound for Athens via Genoa and Naples and the Yugoslavian port of Rijika. In Greece, as in every other country that he will visit, Rettger plans to stay as long as the country proves of interest to him. He is a member of the American Oil Chemists Society, and has a fellow member to look up in every major foreign city, giving him plenty to look forward to seeing and doing.

Egypt, India, Ceylon, Thailand, Hong Kong, Japan and the Hawaiian Islands also are on his itinerary, which is subject to change anywhere, anytime. He plans to travel most of the way by ship and is setting out to see how cheaply an around the world journey can be made.

On the West Coast he will visit his daughter, Courtney, who now lives in Pomona, Calif.

And eventually he expects to settle down in Barbados, this being his particular favorite of the islands in the Caribbean.

November Mellorine Output Shows Large Increase

November production of mellorine and other frozen desserts made with fats and oils other than milk-fat was estimated at 2,160,000 gallons, according to USDA.

This is 16 percent more than in November, 1957, and 38 percent greater than the five-year, 1952-56, average for the month. Accumulated production for the first 11 months of 1958 totaled 37,775,000 gallons, 16 percent more than for the same period last year and 50 percent above the five-year average for these months.

Compared with November, 1957, production increased most sharply in California, followed by Oregon, Montana, Texas and Illinois.

Ice cream production in the U.S. during November was estimated at 43,670,000 gallons, just under the record high output for the month attained in 1956. November production was six percent greater than the November, 1957, output and 11 percent more than the 1952-56 average for the month.

Arkansas-Missouri Ginners' Set Industry Conference

The Arkansas-Missouri Cotton Ginners' Association will have its fourth annual Industry Conference, Jan. 12-13, in Memphis at the Peabody Hotel.

Three subjects to be covered are Production and Harvesting; Ginning Efficiency, and Gin Operational Costs.

Claude Welch, director of the production and marketing division of the National Cotton Council, will speak.

Soybean Growers Seeking Storage Facilities

Growers of Crittenden County in Arkansas are working on plans for $600,000 soybean storage facilities at West Memphis. J. E. Lalman, president of the Crittenden County Farm Bureau, said discussions are underway with the Arkansas Rice Growers' Association and West Memphis Chamber of Commerce.

The county grew about four million bushels of soybeans this season.

Cotton Producers' Division Reports Record Activity

Farm supply purchases by the Cotton Producers' Association, Atlanta, were at a record high of $22 million during the past year. The cooperative said that feeds accounted for more than half of the total, which was 22 percent above the previous year.

■ **W. H. FARMER, Delhi, La., has been elected president of the Louisiana Delta Council.**

Cotton Ginned to Dec. 13

The following table shows the number of bales of cotton, from the crop of 1958, ginned through Dec. 12, by states, with comparable figures for the corresponding periods in 1957 and in 1956.

(Running bales; linters are not included)

State	1958	1957	1956
United States	10,877,821	9,233,701	12,815,385
Alabama	435,471	520,705	743,010
Arizona	630,387	562,835	707,003
Arkansas	840,690	809,507	1,368,625
California	1,567,584	1,440,894	1,397,338
Florida	6,482	6,786	9,178
Georgia	348,830	385,998	575,060
Louisiana	284,038	311,164	568,047
Mississippi	900,396	948,368	1,572,907
Missouri	257,932	149,535	438,891
New Mexico	263,568	185,564	273,158
North Carolina	256,691	230,301	352,581
Oklahoma	296,455	204,155	251,198
South Carolina	299,817	341,453	515,830
Tennessee	387,361	372,785	523,136
Texas	4,090,540	2,752,416	3,499,625
Virginia	8,000	7,067	9,990
All other states	3,579	4,168	9,808

The 1958 figures include estimates made for cotton gins reporting too late for use in this report and are subject to revision when checked against individual reports of ginners being transmitted by mail. The revised total for cotton ginned this season prior to Dec. 1, is 10,216,146 bales.

The U.S. total for 1958 includes 212,569 bales of the crop of 1958 ginned prior to Aug. 1, which was counted in the supply for the cotton season of 1957-58, compared with 230,756 for 1957, and 404,845 for 1956. Also included are 64,283 bales of American-Egyptian cotton for 1958 compared with 55,637 for 1957, and 40,061 for 1956.

Cotton consumed during November, 1958, amounted to 672,838 bales. Cotton on hand in consuming establishments on Nov. 29, 1958, was 1,425,137 bales, and in public storage and at compresses 11,913,791 bales. The number of active consuming cotton spindles for November was 17,611,000. Imports during September, 1958, were 23,400 bales and the exports of domestic cotton, excluding linters, during October were 181,452 bales.

Cotton Production

(Continued from Page 36)

may be. The key to the greater value of weather information in recent years has been the inclusion in forecasts of the general weather picture and revision of forecasts as conditions change. This has always been done for pilots and it is just as necessary for farmers. Information on fronts, air mass conditions and movements are essential to the intelligent use of a weather forecast. In addition, information on dew, wind, humidity and their possible effects on farm operations are extremely valuable.

The second basic principle relates to farmers' preparation to use this information. First, learn where the type of information described above is available and when. Second, listen to it regularly. Third, learn something about meterology. TV has taught more people about weather than anything else ever invented. There are a number of easily understandable books on weather so you can read about it. Remember, it is the most important single factor in agricultural production. Watch the weather as it develops before your very eyes. A professional meteorologist spends a lot less time watching the ether than you do. Until forecasts become 100 percent accurate, you must constantly evaluate the current weather. This can be done if you are familiar with the general weather situation.

When you have the weather sized up for a given period of time, then you must act on the information. Since we can't change the weather WE must make the change. What you should do, or the need for doing anything, will vary according to current operations. In any case your plans should be continually revised and your farming program altered to take advantage of variations in the normal weather pattern.

• **The 30-Day Forecast** — This type of forecast is available from several sources. In addition to the Weather Bureau, several commercial services prepare forecasts which are published in farm magazines.

I made a survey which showed that in terms of general application to our farming program, the odds are about 10-8 that the forecasts would have been helpful during 1957 and 1958. The possible applications of this type of forecast are as follows:

1. To estimate the amount of feed that pastures will produce in early spring.
2. To make plans for land preparation.
3. To advance or delay the planting of cotton and other crops and decide how they should be planted.
4. To apply or withhold additional nitrogen or water.
5. To forecast possible insect infestations.
6. To estimate our needs for harvesting equipment as a basis for hiring custom pickers.

Because the 30-day forecast is not very accurate in terms of agricultural operations, the best use would be to hedge in the application of this information. If an alternate course is indicated by the forecast which itself involves no hazards, by all means go ahead. If there is risk involved the change should be carefully considered and the odds kept in mind.

• **The 5-Day Forecast**—This is probably the most valuable of all agricultural forecasts. It is remarkably accurate and it allows enough time for making the necessary adjustments in the farming program. For example:

Five days is enough time to cut, dry and bale hay.

It is enough time to rush up or extend a poisoning schedule.

It will allow time to change the type of defoliant to be used. A farmer can decide to work those fields which get boggy or wet ahead of those that dry more quickly.

• **The Daily Forecast** — This is the most accurate forecast. It helps us decide:

1. Whether we should poison cotton today or wait till tomorrow.
2. Whether we should use a quick acting poison to get ahead of the rain or wait till after the shower and put on one with a residual action.
3. Whether or not conditions will be good for defoliation and what type to use.
4. For irrigation we have not depended too much on weather forecasts. The areas hit by summer showers are usually scattered and therefore it is best to keep irrigating regardless of what the forecast says or how the weather looks or even if it has already started raining.
5. The proper timing for other operations such as pouring concrete or protecting equipment against extreme weather.
6. Whether to go to the ball game tomorrow or stay home and pick cotton.

• **Climatology** — The services of the Weather Bureau are not limited to forecasts. Records of past weather and their study form that branch which is known as Climatology. There are many uses for this data gathered daily from more than 9,000 individual stations in the U.S. This is the basis for determining the climate of a region, on which depends the crops that can be grown, the type of buildings necessary, the drainage plan, whether or not irrigation will be profitable and many other things that affect our daily lives. For example—here is one special application of climatological data.

Cotton develops over a considerable period of time. An individual boll requires some 45-60 days to reach maturity and we have a fruiting period that extends over a period of weeks. What happens in July and August can materially affect what you will pick in October. From the weekly reports cotton buyers can accurately estimate not only the size of the crop but its grade, staple and fiber properties such as strength and Micronaire. This helps them better to serve cotton's customers.

I would like to emphasize that our best chance to take advantage of weather changes is to adapt practices to forecast conditions. Progress in this field is limited by a lack of knowledge of the effects of specific weather conditions on cotton production. We also need to know why and how these conditions cause changes in the cotton plant. When we have this basic understanding we can experiment with ways of doing something about it. A start has been made in this field by Dr. C. W. Thornthwaite at Tschudy Farms near Marked Tree, Ark. Since 1956 he and Mr. Tschudy have been making their observations and applying them to the production of the crop. At the cotton research center at Stoneville, a newly inaugurated agricultural weather service seeks to provide some of these answers as well as provide a very up to the minute series of forecasts designed primarily for local agriculture. In the very first month of operation they forecast and got a perfect October for harvest. Farmers are enthusiastic about the forecast and the knowledge which we hope to gain about how climate affects crops may turn out to have the greatest benefit in the long run.

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Our Cotton Production Practices and Results

BYRON W. FRIERSON,

Assistant Director of Agriculture, Texas Department of Correction, Sugarland, Texas

The farms of the Texas Department of Corrections consist of approximately 50 percent alluvial river bottom soils. The annual rainfall in our counties of operation ranges from 42.2 inches to 49.59 inches. The history of the prison farms up until 1949 was primarily one of mule farming. Very little heavy equipment had been available for purposes of drainage, and as a consequence, drainage systems were inadequately planned and poorly constructed. The alluvial soils in the river bottoms are fairly flat. One of the most obvious needs was to establish adequate drainage systems over the areas to be farmed in cotton. Adequate drainage systems have been established on approximately 20,000 acres of the 73,000 acres. This work was commenced in the spring of 1950 and is continuing at this time.

Good drainage is a must if cotton land in our area is to be properly prepared and properly cultivated. With our rainfall pattern, cotton on poorly drained land will suffer from lack of oxygen during periods of heavy rainfall.

We have followed for several years a practice of chiseling hard pans wherever they are found. This is done during the period of preparation between crops. It is rare to find a cotton tap root that has been turned back due to hard pan conditions. First, I think that chiseling has improved the internal drainage of the soil; second, I feel it has improved the moisture storage capacities of the soil; third, with long tap roots, it appears logical to assume that we are drawing on plant food and moisture below the hard pan zone which possibly has existed for many years. We attempt wherever possible to stay out of our fields with heavy equipment when the moisture content of the soil is too high.

• **Insect Control Problem** — During my first visit to the system's farms I found a field of cotton shoulder high at harvest time, with no fruit visible

at all. With diligent search, a boll could be found about each 20 to 40 feet. This was the first indication to me as to how severe insect damage could become if left unattended. With the assistance of entomologists from the Extension Service, and in consultation with many privately employed entomologists, a thorough and complete spray control program for cotton insects was formulated. Approximately 40 spray machines were constructed in our shops.

Careful examination showed that thrips were infesting our cotton almost as soon as it emerged from the ground. We began in 1951 to practice early season control with insecticides to prevent damage from thrips and flea hoppers. In general, *The Insect Control Guide*, as published by the Extension Service, is followed carefully. However, in many cases we have found it necessary to apply more applications than are generally recommended to control these two insects and start the cotton properly into the fruiting process. The timing of spray applications is followed as religiously as weather will permit.

Late season control of cotton insects involves several insects in our area. The boll weevil and bollworm create a problem each year. We have also had trouble in varying degrees with spider mite, cabbage looper, brown leaf worm, pink bollworm, and aphids. We do not follow a set pattern on our late season control. This program is developed as the situation may demand on each of the farms and steps are taken as may become necessary for protection. This policy has resulted in the need of as many as 16 applications of poison during a particular crop and to a particular area.

• **Irrigation Practices** — During certain periods of the year excessive rainfall creates serious problems in our area. A study of the rainfall pattern has shown that the moisture in storage in the soil, plus that which falls during the growing season, is normally inadequate to supply the plant through the period of maximum moisture use, which of course is also the maximum fruiting period. Small scale supplementary irrigation systems were set in on the farms to test the feasibility of irrigation in our particular area. We learned that it was very foolish to attempt to use supplementary irrigation on cotton in our area without a completely adequate drainage system. We also found that one application of water, properly timed, could raise our yield as much as one-half bale per acre. When these facts were established in our minds, we diligently set about to prepare irrigation facilities and to prepare our land for proper irrigation. This is a development program now underway in our operation. To date we have established water storage reservoirs approximating 2,000 acre-feet of water. The bulk of this water is pumped from rivers in our area of operation. In addition to these supplies, we have established river pumping points in several locations which pump directly into the fields. We have developed other irrigation facilities from creeks, lakes, streams and wells on the various farms.

• **Fertilization Program** — Our 1959 cotton crop fertilization planning has been based on the results of more than 600 soil samples taken following the maturity of the 1958 crop. For our particular operation, we have found that phosphate application during the land preparation operation has been most economically feasible. We have some acres where pre-plant application of nitrogen fertilizers appears to be completely practical. We have some areas where it is obvious we get better results from nitrogen fertilizers applied in side dressings in all cases. On those farms which are primarily Brazos River alluvial clay soils, we customarily apply approximately one-half of the recommended nitrogen as a pre-plant operation in January and February. We place this nitrogen in the form of anhydrous ammonia in the side of the bed and approximately four inches below the depth at which the seed will be planted. Beds are cultivated only with row discs following nitrogen application and weeds are controlled in this manner. The abnormal number of matured bolls in the top fruit of the 1958 crop indicated to us that we supplied adequate phosphate and nitrogen to properly set and mature cotton.

Much more hand labor is used in our operation than is customary or practical for any other cotton producer. After the beginning of fruiting, we cultivate only as is necessary to control weeds and grass. We have made one serious mistake since we started irrigation from which we expect to profit in the future. With recommended rates of nitrogen application and irrigation, it is necessary in our area to cultivate, with wheel fenders if necessary, to control vegetation in the middles until it is certain that the shading effect of the cotton stalk will control vegetation between rows.

◆ ◆

New Product

LA RUE DRY SPINDLE WILL REMAIN ON OPEN MARKET

The LaRue dry spindle, manufactured by Dixieland Manufacturing, Inc., Corpus Christi, Texas, will remain on the open market, Fred Kelley, general manager of the firm, has announced.

He said that competition has resulted in exclusion control of patents for spindle modifications by individual manufacturers except in the case of the La Rue. The spindle, replacement modification for Allis Chalmers, Massey-Harris, Rust and Case cotton picking machines, picks without the use of water. The announcement said that it will remain in the public domain and available to all manufacturers and implement dealers without restriction.

The dry spindle picking principle was recently endorsed by a special committee of the American Cotton Research Institute, headed by E. C. Elting. The committee was formed by cotton spinners who have recently charged producers and ginners with contributing to the decline of American's major cash farm crop by delivering weakened fibers to mills. The weaker fibers cannot compete with synethics, mill operators say.

Weakened fibers, which in turn cause such staples as sheets, shirts, underwear and other necessities to wear out faster than they should, may be caused when ginners heat and clean cotton excessively in the ginning process.

Mills have been requested by their research institute committee to compare cotton picked by the dry spindle method with other methods and to encourage the use of the dry spindle by paying premium prices for the dry picked cotton in order to raise the over-all quality of cotton yarn production.

The dry spindles, first invented in 1904 but made practical for general use only in the last five years, within the last two years have modified most of the cotton picking machines to which they are adapted. The invention of the replaceable barbed insert set in live rubber was the crucial breakthrough in the adoption of the dry spindle, the manufacturer added. Eventually, almost all cotton produced in the U.S. will be machine picked, cotton men agree. Maintenence of quality by dry picking is essential, however.

Kelley's statement said the only other semi-dry spindle manufactured by an independent firm was recently sold for exclusive use of a national brand of cotton picker.

FRED KELLEY, general manager, Dixieland Manufacturing, Inc., is shown in a field being harvested by a picker using the La Rue dry spindle; in the picture at the right, Kelley shows how the spindles look in a mechanical harvester.

Classified Advertising

RATES AND CLOSING DATES: Ten cents per word per insertion. Include your firm name and address in making word count. Minimum charge $2.00. Copy must be in our hands by Thursday morning of week of issue. Please write plainly.

Oil Mill Equipment for Sale

OIL MILL EQUIPMENT FOR SALE — Rebuilt twin motor Anderson high speed expellers, French screw presses, stack cookers, meal coolers, fourteen inch conditioners, filter presses, oil screening tanks, complete modern prepressing or single press expeller mills.—Pittock & Associates, Glen Riddle, Pennsylvania.

INSPECTIONS and appraisal. Dismantle and installation.—Oscar V. Shults, Industrial Engineering, Phone BUtler 9-2172, P. O. Box 357, Grapevine, Texas.

FOR SALE—2 French 4-cage screw presses 9" extensions, 75 h.p. motors. French screening tank. Filter presses. French 72" cooker Frenco Drive—72" cooker Hypoid Drive. D-K 5-high 90" all-steel cooker. Carver 141-saw linters. Bauer 199 seed cleaner. Bauer 198 hull beater. Butters 141-saw machines. Carver 48" bar huller. 36" attrition mills. No. 8 cake breaker. 2 single-box, up-packing, all-steel linter presses. Electric motors, starting boxes and switches. Steel sand and boll reel.—Sproles & Cook Machinery Co., Inc., 159 Howell St., Dallas, Texas. Telephone RI-7-5958.

SEASON'S GREETINGS—V. A. Lessor & Co., Oil Mill Machinery, P. O. Box 108, Fort Worth, Texas.

FOR SALE—1 rebuilt Tru-line gummer, 2 single box downpacking presses, 16 Carver high-frame 176-saw linters, 9 Carver high-frame 141-saw linters, 1 French 5-high 85" cooker. Above machines in first class condition.—Valley Machinery & Supply Company, Inc., P. O. Box, DeSoto Station 2252, Memphis, Tennessee. Phone JA 7-7935.

Gin Equipment for Sale

FOR SALE—One complete modern gin, with steel building, to be moved, price reasonable. Also several extra pieces of modern machinery such as droppers, condensers, packers, presses, and cleaner feeders. Contact Jim Hall, P. O. Box 751, or telephone RIverside 1-1393, Dallas, Texas.

FOR SALE—1957 Model Lummus Comber complete. Ginned less than 300 bales.—Borderland Coop Gin, Phone: YUcca 7-3123, Box 960, Borderland Road, El Paso, Texas.

FOR SALE—Hardwicke-Etter Lint Master complete and in good condition.—Perry Gin Company, Tunica, Mississippi.

I am installing two Moss Constellation Lint Cleaners in tandem, and would like to sell my Moss Super Cleanmaster. These double unit machines in excellent condition. — Regis LaGrange, Phone PL 4-3401, Arnaudville, Louisiana.

FOR SALE—1958 Model LUMMUS COMBER complete. Operated one season. Make offer first letter. —Owens Co-op Gin, Ralls, Texas.

FOR SALE

Several LUMMUS COMBERS in good condition, with all connections, with or without motors. Will consider any reasonable offer. These units located in Arizona and California.

Attention dealers: Can offer drastic discount on 5 or more and can arrange delivery your destination.

P. O. Box 361 Phoenix, Arizona

FOR SALE—Type A Lummus Comber complete with 7½ and 15 h.p. motors, all supports, adapters and lint slide. MAKE US AN OFFER.—Henderson Gin Company, England, Arkansas.

FOR SALE— 1957 Model LUMMUS COMBER, complete with motors, lint slide and adapters. Ginned less than 3,000 bales. Make us an offer.—Carlee Gin Company, England, Arkansas.

FOR SALE—Dismantling gin plant. Must be moved by February 1, 1959. 1-100 h.p. electric motor with switch in good condition, 5-80, 12" Lummus automatic gins, 5 big drum Lummus cleaning feeders, 1 Hardwicke-Etter seed scale, Lummus belt distributor, 5-cylinder 60" Lummus air draft cleaner. Belting up to 18" by 6 ply R.E. practically new. Shafting in various sizes and bearings, pulleys, etc. For further details write Kollaja Gin Co., Ganado, Texas. Phone 3185, Joe Kollaja.

NEW YEAR SPECIAL—Subject to prior sale, one complete 3-80 Murray gin plant, less power, buildings and land, to be moved, consisting of 3-80 saw loose roll glass front gin stands, 60" Mitchell V-belt Super units, practically new Super Jems, Murray conveyor distributor, Murray VS separator, seed sterilizer, Murray big drum air line cleaner, Murray condenser, Howe wagon scales, three fans, all-steel double box Gullett up-packing press with Murray steel tramper and press pump, and all line shafting, bearings and pulleys, special price of $9,000 at location.—R. B. Strickland & Co., 13-A Hackberry St., Phone: Day or Night, PL-2-8141, Waco, Texas.

SOIL BANK VICTIMS—Modern gin machinery in Eastern States for sale. Contact me regarding used machinery or complete gin plants.—James C. Mann, Phone: 4931, Conyers, Ga.

FOR SALE—6 cylinder air line cleaner; 7-cylinder incline cleaner; 5-cylinder incline cleaner; 5-stand conveyor distributor; 14' Hardwicke-Etter bur machine; 30 h.p. electric motor; 18-shelf insulated Hardwicke-Etter tower drier; 1-50" Hardwicke-Etter separator. The above equipment is all-steel, can be bought as is, or after it has been reconditioned. Located now near Brownfield, Texas. Plan to start dismanteling just after first of year. Can see by calling Spencer & Sons at Tokio Gin Company, Tokio, Texas. Phone Wheatley 3391 or Wheatley 3322.

FOR SALE

GINS—4-80 F3 Continental brush; 5-80 Continental Model C brush; 5-80 Continental Model C ABs; 3-80 Continental Model C brush; 1-80 Continental Model E brush; 12-80 Murray glass fronts; 10-80 Cen-Tennial glass fronts, loose rolls; 4-80 Cen-Tennial Commanders with loose roll; 4-80 Lummus automatic all-steel; 10-90 Gulletts; 2-80 Hardwicke-Etters.

HULLER CLEANER FEEDERS—10-80 V-drive 60" Super Mitchells; 5-66" and 5-60" Hardwicke-Etters with 4-cylinder after-cleaner. 5-80 Continental 4X; 5-80 Continental Double X; 4-80 Lummus FECs.

DRIERS—3 Murray Big Reels; 1 Mitchell Jembo, 6-cylinder, 66" wide; 1 Lummus Thermo; new tower driers at list price.

LINT CLEANERS—5-80 Lummus Jets complete with lint flue, 30 h.p. motor and Hartzell fan. 5-80 and 4-80, 1951 Model Hardwicke-Etters complete with lint flue, fans and motors. 5-80 Murray, 1951 Model saw type; 5-80 Murray ABC Jets complete with lint flue and Hartzell fan; two 1957 Model Lummus combers.

CONVEYOR DISTRIBUTORS — 5-80 Continental; 4-80 Lummus.

PRESSES—1 Murray all-steel downpacking; 1 Continental steelbound with steel platform; 1 Murray PX with steel platform; 1 Continental steelbound with wood platform, all-steel Hardwicke-Etter single box.

PUMPS—1 Murray automatic; 1 Alamo automatic; 1 Lummus; 1 Cen-Tennial; 1 Beaumier.

CONDENSERS—1 Hardwicke-Etter, 72"; 1 Continental, 72".

CLEANERS—1-72" Lummus 6-cylinder with grid bars, reclaimed cylinder and V-drive; 1 Cullett 50" inclined 6-cylinder blow-in type; 1 Murray horizontal 6-cylinder; 1 Lummus 52" horizontal 6-cylinder; 1 Lummus horizontal 96" 6-cylinder; 1 Mitchell Jembo 6-cylinder, 66" wide; 1 Continental 4-cylinder inclined.

BUR MACHINES—2-10' steel Wichitas; 1-14' steel Stacy; 1-14' steel Lummus; 1 Mitchell Jembo; 1-14' Hardwicke-Etter wood.

SEPARATORS—1 Continental 52"; 1 Lummus 52"; 1 Gullett 52"; 1 Stacy 52"; 1 Murray 52".

FANS—From 20" to 50" diameters.

ELECTRIC MOTORS—From 3½ h.p. to 150 h.p.

MISCELLANEOUS ITEMS— 2 sets Fairbanks-Morse seed scales; 1-14' rotor lift; pulleys from 4" to 72" in diameter; 1 Murray and 1 Hardwicke-Etter vacuum; floor stands, etc.

ENGINES—1 Waukesha 6-cylinder diesel; 1 MM Twin Six; 1 V-8 Le Roi; 1 MM 6-cylinder; V-12 Climax.

BILL SMITH

Phones OR 4-9626 and OR 4-7847

Box 694 Abilene, Texas

FOR SALE—4-80, 1946 Model glass front Murray gins (new ribs and saws, 2 seasons), includes 4 1946 Model Super Unit Mitchells, all in first class condition. A real bargain. Also, one MM 210 h.p. engine, run 3 seasons.—Wilbur Krenek, Phone NO 2-5075, Rosenberg, Texas.

FOR SALE—The only in gin in Goree—5-80 all-steel Continental with double lint cleaning, large labor camp, two small elevators, surrounded by good farming land with a lot of irrigation. Have ginned more this season but will average 3,000 bales and have bought 280,000 bu. of wheat and milo this season. 29% down and I will carry paper. I must quit.—Orb Coffman, Goree, Texas.

FOR SALE CHEAP—From gins recently dismantled. Mitchell Super Units, Jembo Cleaners, Conveyor Distributor and Heaters. Cen-Tennial all steel air blast gins, 60" steel condensers, conveyor distributor and twin trash fans with 30 h.p. motor and starter. Murray Type VS all steel vacuum separator. All types fans, 20 h.p. motors, press pumps, etc. Write us for complete descriptions and rock bottom prices.

MUSKOGEE COTTON OIL COMPANY

Murray 2-4711 Muskogee, Oklahoma

SPECIAL BARGAINS—5-80 saw F-3 brush gins, excellent condition. 4-80 saw late model Murray glass front gins. Steel bur machines: One right hand 14' steel Hardwicke-Etter, 1-14' Murray, 14' and 10' Lummus. Steel cleaners: 4-cylinder Continental incline, 5 cylinder Hardwicke-Etter, 6- and 12-cylinder Stacy, 4-cylinder 8' and 12-unit Lummus Thermo, 6-cylinder Hardwicke-Etter, Murray air line. Murray lint cleaners. Mitchell convertible and Super units in 60" and 66" lengths. Six-stand Lummus conveyor distributor. Continental press pumps. 12', 15' and 16', 9" screw elevators. New Government type tower driers. Stacy, Murray and Hardwicke-Etter heaters. New and used fans, belting, conveyor trough and a general line of transmission equipment. For your largest, oldest and most reliable source of used and reconditioned gin machinery, contact us. Call us regarding any machinery or complete gin plants which you have for sale or trade.—R. B. Strickland & Co., 13-A Hackberry St., Phone: Day or Night: PL-2-8141, Waco, Texas.

Equipment Wanted

WANTED TO BUY—Truck scales 20', or longer, any make.—Texas Waste Materials, Box 5267, Corpus Christi, Texas.

WANTED—Long box all-steel press and long stroke tramper.—Box AO, The Cotton Gin and Oil Mill Press, P. O. Box 7985, Dallas 26, Texas.

WANTED—Good Continental 80- or 90-saw gin plant to be moved with lint cleaners, all-steel machinery and building. Will pay good price if machinery is clean.—Box PX, The Cotton Gin and Oil Mill Press, P. O. Box 7985, Dallas 26, Texas.

WANTED—Five individual Continental lint cleaners. Please state model, price, where located, and how many bales ginned on this equipment.—Box MF, The Cotton Gin and Oil Mill Press, P. O. Box 7985, Dallas 26, Texas.

WANTED—20 seed sterilizers complete. Advise make, price and condition first letter.—Bill Smith, Phones OR 4-9626 and OR 4-7847, Box 694, Abilene, Texas.

WESTERN OUTLETS—Used gin equipment for Western Buyers wanted. Complete plants or any gin equipment.—James C. Mann, Phone: 4931, Conyers, Ga.

WANTED—Impact cleaner 72", lint cleaner, sufficient for the production of 4-90 gin stands. Give full particulars. Must be of modern make and in good condition. Continental or Lummus preferred. —Box GN, The Cotton Gin and Oil Mill Press, P. O. Box 7985, Dallas 26, Texas.

WANTED—Used flat bale press, pump and tramper, all-steel. Must be in good condition for use in high speed gin. Cash purchase. In reply furnish details of make, model, age, condition, price, location.—Dos Palos Cooperative Gin, Inc., Phone DUpont 7-4437, Rt. 1, Box 170, Dos Palos, Calif.

Personnel Ads

WANTED — Experienced Superintendent capable of operating expeller mill. Must be sober and thoroughly capable of assuming complete operations. Ideal living conditions.—Box HO, The Cotton Gin and Oil Mill Press, P. O. Box 7985, Dallas 26, Texas.

Power Units and Miscellaneous

FOR SALE — 6,000 gallon anhydrous ammonia tank, Beaird serial 1532-2, $1,750, f.o.b. Peck, Louisiana.—E. B. Knotts, Sicily Island, Louisiana.

CERTIFIED REX Cotton Seed. Proven new variety of cotton developed by the Arkansas Experiment Station. High yielder, resistant to bacterial blight and Fusarium wilt diseases and storm losses. Early maturity, big boll, good staple, high gin turnout. Matures ten days earlier than leading varieties of cotton.—Write for literature and prices. Sack to car loads.—Lambert Seed Company, Newport, Arkansas.

FOR THE LARGEST STOCK of good, clean used gas or diesel engines in Texas, always see Stewart & Stevenson Services first. Contact your nearest branch.

FOR SALE—(1) 150 HP New GE Slipring Motor, 3/60/440/720 RPM, Type M, Ball Bearing, Open Dripproof, $3,875.00 Net. (2) 200 HP New Master, Slipring Motor, 3/60/440/900 RPM, Ball Bearing, Open Dripproof, $5,130.00. — W. M. SMITH ELECTRIC CO., 3200 Grand Ave., Dallas, Texas.

FOR SALE—4,000 tubular steel bunk beds, single and double deck, good condition. Ideal for Bracero Camps.—Texas Waste Materials, Box 5267, Corpus Christi, Texas.

FOR SALE—One Le Roi L3000-RXISV 12-cylinder 300-350 h.p. Cotton gin equipped, guaranteed in operating condition. Priced low to move. One General Motors diesel twin—6-cylinder, cotton gin equipped, guaranteed in operating condition—300 h.p. @ 1800 RPM. Priced low to move. One Minneapolis-Moline Twin 6 Model 1210-12A, cotton gin equipped, guaranteed in operating condition—200 h.p. Priced low to move.—W. M. Smith Electric Company, HAmilton 8-4606, 3200 Grand Avenue, Dallas Texas.

Spain To Buy U.S. Cotton

International Cooperation Administration has authorized Spain to spend $5,150,000 for cotton in the U.S. and possessions under the foreign aid program, between Dec. 10 and Feb. 28, with delivery by March 31.

Control Favored Again

Cotton growers overwhelmingly voted for the acreage control system, as they have always done, in the election held Dec. 15.

Yes, Virginia, There's A Santa Claus

Answering the famous question of Virginia, the little girl who long ago asked about Santa Claus, The Wall Street Journal recently published a two-sentence editorial. It said:

"The U.S. government is estimated to have given away more than $60 billion in foreign aid since World War II. Now then, Virginia, what was your question?"

• Producer Associates List Objectives

AMERICAN Cotton Producer Associates at a Dec. 18 meeting in Memphis adopted the following recommendations:

(1) That cotton produced under the "Choice A" plan be handled through the usual channels of trade.

(2) That the USDA announce by Feb. 1, 1959, that the policy of the U.S. will be to maintain a fair share of the world market for U.S. cotton and that the sales price of U.S. cotton under the export programs for the marketing year beginning Aug. 1, 1959, and thereafter be made fully competitive for all grades and staples, in accordance with the provision of the Agricultural Act of 1956.

(3) That accumulative carrying charges under the export sales programs be adjusted as a means of expediting sales.

(4) That the CCC be requested to catalog 1959 crop cotton, at the discretion of the Department, as soon as feasible after May 1, 1959, but that this cotton not be taken over and offered for sale until the usual time.

(5) That all cotton sold after Aug. 1, 1959, by the CCC be sold on the same class it was taken in, except in cases where such cotton was in storage for three years or more.

(6) That all cotton such as wasty, grassy and barky bales be acceptable for both the purchase and loan programs with appropriate penalties.

(7) That cotton produced under the "A" and "B" options be treated alike with respect to carrying charges until such time as the cotton is cataloged and offered for sale under the export or unrestricted use programs.

(8) That the CCC initially set the loan and purchase values of split grades half way between the full grades and colors as is now done by CCC in selling split grades from its stocks.

(9) That loan and purchase price differentials for qualities be announced not later than March 1, 1959, so that producers may have adequate time to evaluate the two programs before making their decisions.

Edwin O. Lundgren Dies

Edwin O. Lundgren, Sr., owner and manager of Elgin (Texas) Cotton Oil Mill died on Dec. 23. Survivors include Edwin O. Lundgren, Jr., and Ralph H. Lundgren, who were associated with him at the oil mill.

Club Has Cotton Theme

"Cotton for Christmas" was the theme of the Lubbock Agricultural Club ladies' night meeting Dec. 15. Hemphill-Wells Store presented a style show.

■ **MICHAEL SLOTE, formerly of Brandwein-Mazur Co., has formed Michael Slote, Inc., located at 7 Water St., New York 4, N.Y., and will deal in both imported and domestic linters, cotton and waste. The phone number is BOwling Green 9-5261.**

Read 'Em and Weep

Economic Outlook—You Takes Your Choice

READERS OF THIS PUBLICATION need have no doubts as to what will happen in 1959. Two famed economists—one from Arkansas and one from Arizona—spell out the future in articles in this issue. On Page 18, B. Ubberson, the Sage of Chitling Switch, expounds his views. These, in brief, are "Years Ending in Nine Ain't No Good." On the other hand, the following article outlines another viewpoint. The author is Herbert A. Leggett of the Valley National Bank, Arizona, who says:

"SHAPE OF THINGS TO COME"

"We live in an era when the thought is father to the wish and invention is mother of the unnecessary. This may be responsible for our American prosperity, the secret of which is doing what doesn't come naturally. The waning year was both horrid and torrid, featuring horror movies on TV and horror dresses on Uno Whom. We can only hope that the normal relationship between sackcloth and ashes will soon be restored. Meanwhile the men have countered with the 'Ivy Look' which is basically a chemise with trouser legs.

"What has all this to do with economics? Plenty, it seems. The biggest economic news of the year was the announcement that the mystery of the business cycle has at last been solved. Dwarfing in importance the launching of celestial satellites and advances in nuclear science, the solution is quite simple now that we know what it is. Propounded by none other than McGraw-Hill's Department of Economics, without the slightest suggestion of leg pulling, it is flatly stated that the 'knee-length chemise means prosperity for years ahead.'

"This is good news, of course, although the rationalization is not entirely reassuring. Apparently it has something to do with the spirit of adventure which causes people to throw caution to the winds and embark on all sorts of endeavors or wild speculations. It is also tied in with Fatalism which counteracts such restraining influences as Fear, Common Sense and Experience.

"Without being too technical about cause and effect, researchers have discovered an amazing correlation between economic trends and the length of women's dresses. When hemlines go up, stocks go up and Wal' Street's spirits soar. When dresses droop, so does Wall Street.

"According to the motivation boys it's as clear as the leer on your face. There has been nothing like it since Nostradamus. However, comes now our Fashion Editor who reports that necklines are still in a downtrend. Wall Street is expected to eye the situation closely and we shall try to cover it off and on. Meanwhile, our biggest personal worry is a plunging waistline."

"TOGIE" HARRELL

(Continued from Page 5)

the Philippines and, on the U.S.S. Brooklyn, to Japan, China and Russia.

Fort Worth almost lost a future Mayor at Yokohama, Japan. Yeoman Harrell was on the Brooklyn during the famed coal dust explosion, which caused heavy casualties. Harrell was handling some keys to his helper when the explosion picked T. J. up and dropped him down a manhole. The helper was killed.

For 11 months, Harrell was at Vladivostock during the stirring days of the Russian Revolution. As the Czar abdicated, Kerensky rose and fell and the Bolsheviks took over, he saw the stream of refugees flow by and worked with other Americans, British, Japanese and French to keep order and care for the needy.

After leaving the Navy, "Togie" went with the Comanche (Texas) Cotton Oil Co. and on Jan. 3, 1921, joined the organization where he is today. Traders Oil Mill Co. had been built three years earlier by B. W. Couch. There were four oil mills in Fort Worth then—Mutual, headed by C. C. Littleton; Riverside, by Sidney Webb; Swift's Fort Worth Cotton Oil Mill and Traders.

Starting as scale clerk, Harrell rose rapidly. He became seed buyer and was treasurer and general manager in eight years. On Aug. 1, 1931, he was made vice-president, also; and on Dec. 3, that year, became president and general manager. About this time, the operation became associated with Procter & Gamble Co.

The imagination and initiative which Harrell showed in college have followed him throughout his oil milling career. Traders Oil Mill, for example, has a unique record of producing cottonseed protein foods for humans. Harrell brought C. W. McMath and J. Bob Roberts into the organization to do this. Food products which have been widely sold include the protein flour, Proflo; Cinaco and other products used as bases for imitation black and white pepper, cocoa, cinammon; and Pharmedia, a media for pharmaceutical preparations.

"Togie" laughs about the first $6 shipment of a 100-pound bag of cottonseed flour, which was supposed to have gone COD. It went without any payment, and a worried bookkeeper asked Tom about it. "Well," Tom said, "It's only $6; I'm glad it wasn't a $600 shipment." The bookkeeper stalked away, muttering, "You never will sell $600 worth of the damn stuff." But they did.

Traders also pioneered in pelleting cottonseed meal and has made a quality product famed on the range. The organization also has been noted for many other contributions to oil milling and agriculture, and no one in the oil mill industry has been more aggressive in agricultural work and public relations than Tom Harrell.

In 1926, he worked actively with those who established the Educational Service for the cotton oil industry.

Harrell, as chairman of the agricultural committee, later urged Texas Cottonseed Crushers' Association (which he had headed in 1929-30) to secure an agricultural director to work to improve cotton and Texas agriculture, as the Educational Service was doing nationally. C. B. Spencer was chosen, and his accomplishments are recognized throughout the country. "Togie" has chairmanned the agriculture committee of the Texas Association practically all of these years.

Giving a watch to winning college livestock judges, a $500 award to encourage interest in soil conservation, grass judging prizes for 4-H members and Future Farmers—these are a few of the ways in which Tom Harrell has worked to help agriculture.

• **His Honor, the Mayor**—Running a big oil mill and cooperating with such varied agricultural activities would be enough to keep most men busy—but not "Togie" We've mentioned that he served as Mayor of Fort Worth, and he was a very active, busy city executive, too, although he minimizes the importance of the job by telling this story on himself:

Texas Christian University played in New Orleans' Sugar Bowl while Tom was Mayor of TCU's hometown, and he went to the game. While visiting with a New Orleans friend, that friend ran into two people from Fort Worth whom he knew but Harrell didn't. "Who is Mayor of Fort Worth?" the New Orleans man asked the two Fort Worth residents—and neither knew that his name was Harrell or recognized him in the group!

The oil mill executive, among other things, has made the following contributions to civic progress and received unique recognition for his achievements:

He is a director of the Abilene and Southern Railway; also, a director of Continental Life Insurance Co. and Armored Motor Service, Inc. He is a member of the board of trustees of Baylor University; vice-president of the Fort Worth Chamber of Commerce, and a director and member of the executive board of The Southwestern Exposition and Fat Stock Show.

While at the City Hall, as City Councilman and Mayor, he was chairman of the Public Utilities Committee and the Highway Committee. During his tenure

Season's Greetings
ANDERSON & BIGHAM SHEET METAL WORKS
GIN, MILL AND ELEVATOR WORK
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LUBBOCK, TEXAS

Lamb Feeders Operate Efficiently

EFFICIENT, ECONOMICAL FEED, good management and ideal climatic conditions are found in the successful lamb feeding operations of Mike and Roy Echeverria, Casa Grande, Ariz., according to Kenneth O. Lewis, field representative, Research and Educational Division, National Cottonseed Products Association. Lloyd Githens, Casa Grande Cotton Oil Co., formulated and prepared a complete pellet for the Echeverria Feeding Co. This is self-fed to some 6,000 lambs for finishing in 50 days. The ration contains 35 percent alfalfa, 35 percent grain, 5 percent cottonseed meal, and 15 percent cottonseed hulls. Jim Tidwell, feed lot manager, reports gains ranging from 0.4 to 0.64 pound per head per day with an average on over 10,000 lambs of 0.53 pound per head per day—85 percent of the lambs graded Choice, with a 50 percent dressing percentage after a 4 percent shrink at the feed lot. In the hot, dry Arizona climate, water temperature is most important in a lamb feeding operation. Echeverria brothers solved this problem with a constant water circulation system which supplies cool water to the lambs. According to Mike Echeverria, the self-feeding of a pelleted ration enables them to keep a fresh supply of feed before the lambs at all times. Feeder lambs are bought in Idaho, Utah, Nevada, Oregon, Texas, and New Mexico. At present, they have 12,000 head on alfalfa pasture. These were purchased from Navajo Indians. After 90 days on pasture, the lambs will be finished in the feed lot.

of office, there were many street developments.

The city had many dollars of delinquent taxes and he spearheaded a drive for the payment of these taxes under the slogan, "Let's You and I Pay Our City Taxes." In the final day of the drive, designated as "Victory Day" over a million dollars was collected.

He was the first mayor to serve in the new City Hall, and while he was at the City Hall, Fort Worth also built the Library, City County Hospital and Meacham Airport.

He was chairman of the Scrap Paper Drive during the War, and one of a three-member executive committee responsible for the building of the Casa Manana Playground, including the auditorium and coliseum.

He was given the Golden Deeds Awards as "Outstanding Citizen" in 1939.

"Togie" also is a director and past president of the YMCA, Fort Worth Rotary and Fort Worth Sales Managers. He is a member of River Crest Country Club, Fort Worth Club and Exchange Club. He is a Baptist,—a member of Broadway Baptist Church, and the list could go on endlessly, almost but we need the space to tell about what was both the low point and high point in Harrell's career as a businessman and agricultural leader, gaining him national recognition and a unique testimonial.

• **Appreciation Party** — This was the X-disease calamity and the Appreciation Party which followed, on Oct. 14, 1954.

No one wants to revive memories of the disaster which hit the oil mill and livestock industries and became known as X-disease. Different individuals and organizations suffered differently, and worked out their problems as they could. This story deals only with T. J. Harrell and the customers of Traders Oil Mill.

In 1953, cattle began to die throughout the Southwest. After much investigation by many different agencies, it was established that the deaths came through hyperkeratosis, or X-disease. This resulted when feed manufacturers used certain lubricants on machinery and these lubricants accidently contaminated feeds.

Irate livestock producers swarmed around oil mills and other feed manufactures involved—including Traders and Tom Harrell. Tom worked night and day going into the matter and settling claims for huge sums. He lost 40 pounds and family and friends feared for his life. The real story came, though, when every claim was settled.

Tom Harrell was the honor guest at a testimonial affair at which the hosts were some of the best known men in the Southwest—Raymond E. Buck, John B. Collier, Jr., O. P. Leonard, Sid W. Richardson, W. R. Watt and O. C. Whitaker. Every livestock producer involved in the Traders Oil Mill feed settlement was invited.

Harrell learned of the plans, and that they were planning to present him with gifts, and begged them not to give him anything. But he was over-ruled, and "showered" with 25 Angus heifers, a Jeep and a scroll which said that Harrell:

> "In the recent calamity involving X-disease answered a call of integrity and fairness to customers over and beyond the ordinary rules of business and with extreme personal sacrifice, we extend the hearfelt thanks of a grateful industry."

Time Magazine and others throughout the nation wrote reams about the "Cow Shower," but Harrell asked us to say the minimum. So, we add only a few of the scrawled comments received from grateful livestock owners who couldn't be there in person to thank him:

"If more men were like Mr. Harrell this would be a better world to live in."

"Traders' generosity saved me from bankruptcy."

"Because of the fairness of Mr. Harrell, I will always feed Traders pellets."

"Mr. Harrell is the best businessman I know of."

Thus, hundreds testified to their appreciation of the way Tom Harrell had treated them. And the Fort Worth Sales Executive Club proclaimed him "Outstanding Salesman of Fort Worth for 1954."

• **"Grandpa Donkeys"**—"Togie," as we mentioned earlier, has always kept close to that Grandview farm, which his family has owned since 1893. In a unique plan, his father in 1917 divided the farm into four equal shares and deeded them to the four children. The Senior Harrell signed a contract to manage the operation and did until 1942.

Since then, Tom has directly operated his holdings, practicing the sound farming methods which he has preached and encouraged. Now, he's planning to live there when he retires, but his activities will be just as distinctive as they always were elsewhere.

"Grandpa Donkeys" will be a product of the farm. These "paint" or spotted creatures are different from any other donkey you've seen. Tom calls them "Grandpa Donkeys" for two reasons—one is that so many grandpas give them to the kids, and the other is that when other grandpas take out pictures to show, Harrell shows pictures of his donkeys.

It's not that he lacks for grandchildren, or is any less proud of them than other grandparents. Mrs. Harrell ("Hattilu" to hundreds in Fort Worth and in the cotton oil industry) and Tom have one daughter, Francis Ann. She and her husband, W. L. Rodgers, have a six-year-old son, William Randolph; and a five-year-old daughter, Francis Renee. They are frequent visitors and donkey-riders at the Grandview farm now, and will be there even more often when Tom and Hattilu are living there.

The farm house isn't very big, and it may be a job for Hattilu to find wall space for all of the testimonials to Tom. All mean much to him, but none more than the plaque which his own industry presented him last June at the Texas Cottonseed Crushers' Association convention. That's because agriculture and his friends in the cotton industry always will be closest to his heart.

Two Dates Important To Remember

Ginners, crushers and other businessmen should keep in mind two dates involving government regulations. On Jan. 1, a rate increase in Social Security payments becomes effective. On Feb. 2, the new salary requirements for exemption of executive, administrative and professional employees are effective under the Wage and Hour Law.

By U.S. Barter Program

Jackson Says World Cotton Markets Demoralized

■ **FOEIGN COUNTRIES are afraid to buy lint while negotiations are underway to trade fiber for strategic defense materials.**

WORLD COTTON MARKETS have been completely demoralized by negotiations for bartering surplus cotton for defense materials and the offering of such cotton in foreign markets, Burris C. Jackson, Hillsboro, Texas, says.

Jackson is chairman of the Statewide Cotton Committee of Texas and past president of Texas Cotton Association, as well as active in other cotton groups. Excerpts from his statement follow:

"Offers of American cotton at seven and eight percent discount have been prevailing in the Japanese market. Further, such offers are conditional on negotation in other countries.

"This undercutting of the market has unduly disrupted world prices of cotton. Buying of cotton has been virtually suspended in Japan, until Japanese importers can determine definitely whether they are going to be able to buy cotton in volume at discounted prices, due to these barter deals, and particularly until they determine the extent of such discounts. This applies to the purchase of American and foreign grown cottons the prices of the latter having dropped precipitously during the last two weeks, due to fear of a continuing break in barter-discounted American prices. Sales of American and foreign grown cottons have practically dried up everywhere. There is no question that the international market for cotton has become utterly demoralized.

"Sales of cotton through these barter deals have replaced cash sales for dollars. Hong Kong, for example, has no difficulty in paying free dollars for what it imports. The contemplated deals with Hong Kong obviously replace cash sales for dollars. Japanese authorities set up a budget of foreign currencies for cotton imports of several categories, for instance, dollar cottons and sterling cottons. A proposition that has been advanced is for a Japanese purchase of U.S. barter cotton under an arrangement by which Japanese importers would be permitted to use a portion of the budgeted sterling to provide free dollars to pay U.S. exporters for the barter cotton, by converting the sterling to dollars through an exchange transaction in a third country. If the Japanese authorities permit their importers to convert the budgeted sterling to free dollars, those free dollars would be useable for purchase of U.S. cotton under the ordinary sales-for-export program. In that event, this use of these dollars for barter cotton would displace other cash sales for dollars.

"Who pays the seven or eight percent additional subsidy on the cotton exported? The minerals importer pays it to the cotton exporter, which permits the cotton exporter to discount his cotton price. Obviously the mineral importer is not paying this discount out of his pocket. There is no source from which it can come except the overprice which the C.C.C. is paying the minerals dealer above what the minerals dealer is paying for his material. Thus some agency of the U.S. Government is paying seven or eight percent or more above the cost to the minerals importer, namely above the cost at which that agency of the U.S. Government could buy the same materials for cash.

"It might be questionable whether any agency of the U.S. Government can legally spend more of the Government's money for property than the property is worth in the open market."

Jackson added that the government would be subject to less criticism if they bought defense materials at world cash values, saying that these deals are not truly barter.

"There is another serious result, insofar as cotton exporters are concerned," Jackson continued.

"Cotton exporters, relying on the good faith of the administration of the cotton sales for export program, have bought cotton under that program, planning to merchandise it abroad in the normal course, and then may find themselves faced with a serious loss, due to these discounts. Foreign importers and mills are in the same position, when they have bought cotton from the sales for export program, and have not yet sold that cotton or its textile products. All foreign grown cotton is similarly affected, and foreign growths are all selling at much lower prices since Nov. 14, than they were selling for shortly before the new barter program was announced.

"Another effect on cotton exports is undoubtedly not intended by Congress. The larger cotton firms, with nationwide connections, are able to maintain contact with the minerals importers, and to work out deals with them. The smaller cotton exporters, who are far greater in number, have less effective means of maintaining such contact, and are usually frozen out of these transactions.

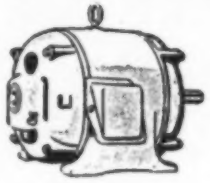
"There is a serious question whether these barter transactions actually result in the increase of American cotton exports. Of course, the cheaper you sell, the more you should sell. But as long as there is no confidence in prices, a foreign mill wants to avoid a price risk, and must do everything possible to see that his cost is no higher than that of his competitors. So when prices are disturbed and unpredictable, as is now the case, foreign importers and mills are frightened, and postpone buying. Some mills are unwilling to manufacture for stock, or to manufacture as much of a given line, or retailers are afraid to fill up their shelves, which results in losing sales for all of them. This uncertainty of price, looking into the new crop months under the new cotton law, has caused the same thing to occur in this country since the law was passed.

"Another uncertainty from the cotton export standpoint, is lack of clear regulations governing barter transactions. There are no regulations, as such, merely press releases. Compounding of uncertainties is resulting in the sales of less American cotton for export, all due to the barter program," he concluded.

Senator Aiken Honored

Sixty cotton industry organizations paid tribute to Senator George D. Aiken of Vermont on Dec. 17 at a testimonial dinner in Memphis. Senator James O. Eastland of Mississippi was the principal speaker. Harry S. Baker, Fresno, president of the National Cotton Council, presented a scroll to Senator Aiken.

SPARE MOTORS



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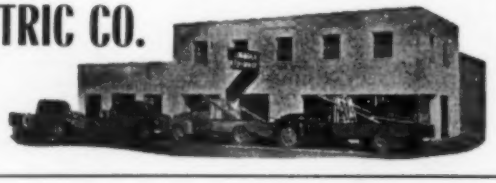

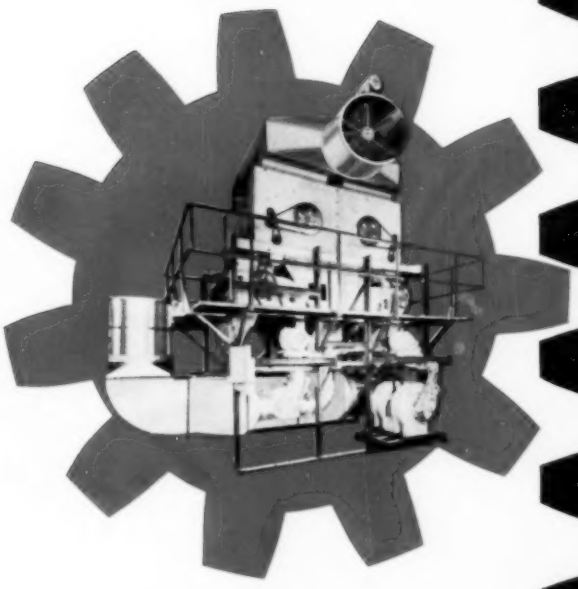

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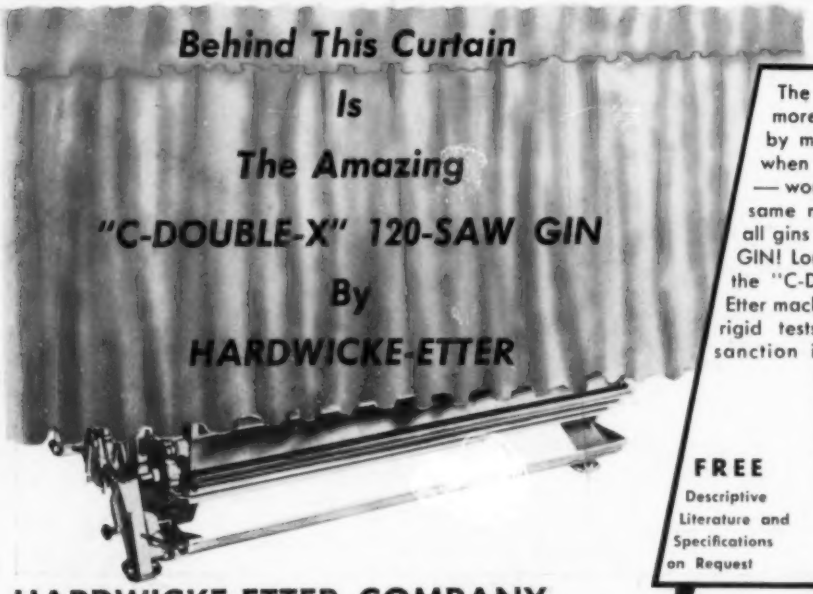

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